世界知名TESOL专家论丛
Foreign Language Teacher Education and Development – Selected Works of Renowned TESOL Experts

Series Editor: Yilin Sun

词汇和语法的描述与教学：基于当代语言学理论的学术研究与教学实践

Description and Instruction of Lexis and Grammar: Research Studies and Teaching Practices Guided by Contemporary Linguistic Theories

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To my grandchildren:

Julianne (佳颖), Leanne (丽颖), and Ian (毅阳).

Preface

The field of TESOL has transformed itself over the last 50 years especially in the last 20 years. It is diverse, complicated, multifaceted and global. The increasing demand for global English has resulted in an expanded global landscape of ever-diversifying profiles of users, uses and contexts. This series, entitled *Foreign Language Teacher Education and Development — Selected Works of Renowned TESOL Experts*, highlights the works of a number of leading researchers and educators in the TESOL field, aiming to exemplify the diversity and complexity of the ELT field. This particular book, ***Description and Instruction of Lexis and Grammar: Research Studies and Teaching Practices Guided by Contemporary Linguistic Theories***, written by Dilin Liu, is an extensive collection of the author's work on lexico-grammar and how English lexis and grammar could be more accurately described, effectively learned and taught by utilizing contemporary linguistic theories and approaches.

Each book in this series focuses on a specific area in the ELT field. Examples include critical approaches to English language teaching, second language acquisition research, second language writing research and practice, second language reading research and practice, World Englishes, teacher education, corpus based grammar/lexical studies, English for specific purposes (ESP), language assessment, bilingual/multicultural education and language policy, etc.

The purpose of each book is to bring together both earlier and recent articles to show the development of the author's work over his/her academic career. The articles have been selected to address both theoretical issues and practical implications in English language teaching for in-service and pre-service ELT professionals, as this series is expected to be used not only for independent study to help foreign language teachers develop professionally, but also as textbooks or recommended reading in teacher training institutes in China and other parts of Asia.

Each book begins with an autobiographical introduction by the author in which s/he identifies issues that have been critical in their areas of expertise and how their work has evolved over time. The rest of the book consists of chapters based on articles published over the author's

professional career. The book ends with a chapter where the author provides a summary of their work, as well as predictions and suggestions for moving forward.

Following the trajectory of each author's own research and teaching career (spanning over 40 years in some cases), each book provides readers with a vivid snapshot of the development in the author's perspectives on the issues addressed, reflecting the changes in theory, research and practice focus that have occurred in the specific area of inquiry over a period of time. It is our hope that this series will contribute to a more plural knowledge base and constructive disciplinary growth for the ELT field.

Drawing on the author's extensive research/publication record and rich teaching and teacher training experience, this book by Dilin Liu covers a variety of lexico-grammatical issues, especially those that have been found to be particularly challenging for EFL English learners, such as English articles, prepositions, tenses/aspects, collocations, and synonyms through nineteen chapters. His book centers on and effectively addresses a very important but often difficult question for language teachers: How to accurately describe and effectively teach lexis and grammar usages.

In the first chapter, the introduction chapter, Dilin shares with readers on how he first became fascinated with English vocabulary and grammar usage issues back in late 1970s to early 1980s when he was an English major and then an English instructor at Jiangxi University (now Nanchang University) in China. The first chapter provides the background and theoretical foundation for the book by overviewing the research on the description and acquisition of lexis and grammar in the past two and a half decades along the trajectory of the author's research and teaching career in the U.S. The remaining eighteen chapters of the book are organized into three major thematic parts: (I) "describing and teaching lexico-grammatical usages," (II) "describing and teaching challenging lexical usages," and (III) "developing useful corpus-based vocabulary and structure lists for language learning and teaching." Given that an adequate and accurate description of lexico-grammatical usage patterns and rules is imperative for successful language learning, some of the book chapters focus almost exclusively on corpus-based description

of lexis and grammar. Other chapters report on empirical studies that investigated how lexis and grammar could be best learned and taught. A few other chapters explore how contemporary linguistic theories-inspired teaching practices can enhance our teaching effectiveness. The book ends with suggested future directions for our endeavor by focusing on the following five areas of work where the author deems more effort is needed: (1) Construction of more corpora, especially specialized corpora and learner corpora, (2) Creation of more corpus-informed teaching materials, including specialized word lists by using rigorous methodology, (3) Production of more and better description of challenging lexico-grammatical issues, (4) Development of more innovative and effective corpus-based and/or cognitive linguistics-inspired learning/teaching practices and tools, and (5) Designing and conducting of more methodologically-rigorous empirical studies to test the effectiveness of corpus-based and/or cognitive linguistics-inspired language teaching.

Indeed, this collection by Dilin Liu not only clearly delineated his decades-long quest for better and more effective ways of describing and teaching English lexico-grammar, but also in the process highlighted the major issues and changes that have occurred since the days when language description and teaching were dominated by prescriptivism and structuralism. The book opens up a whole new way of describing and teaching lexis and grammar usages by utilizing contemporary linguistic theories and approaches, such as functional/socio-, corpus- and cognitive-linguistics.

The *Foreign Language Teacher Education and Development — Selected Works of Renowned TESOL Experts* is very fortunate to have this book as part of its growing list of materials.

Yilin Sun
Macau
September 2016

Contents

Chapter 1

Introduction

Lexis and grammar are arguably the two most important aspects of language. How to accurately describe and effectively teach lexis and grammar is hence a very important, albeit often very difficult question or task for language teachers. This book consists of my years of work in trying to address this challenging question. To help better understand the importance of the question and my work on it, this introduction chapter aims to provide a background about how the question became and has remained a focused area of my research and teaching and what important issues and changes have occurred in this particular research and teaching area over the years. It is of particular interest and importance to note that my long journey in the study of the description and teaching of English lexis and grammar has been heavily influenced by the historical development of the major linguistic/grammatical theories and their impact on the English language teaching (ELT) field along the way. Each important phase of my journey has been affected or driven by one or two dominant linguistic theories. Thus, a discussion of my journey necessitates a brief overview of the dominant linguistic theory/theories and their impact in each important phase. So presented, this chapter should help provide not only a clear trajectory of my work on the topic in question but also a brief history of the major linguistic theories and their influence upon my work and the ELT field at large.

I first became fascinated with English vocabulary and grammar usage issues when I was an English major and then an English instructor at my undergraduate alma mater, Jiangxi University (now Nanchang University), from the late 1970s to early 1980s. I often found myself asking questions, such as why "rice" and "sand" are non-count (uncountable) nouns when they are each clearly formed in distinctive separate pieces just like count nouns "bean" and "peanut." Yet my queries for answers to such questions were frequently unsuccessful. This is largely because, at that time, prescriptive grammar and structural grammar (Bloomfield, 1933, 1942) were the dominant approaches used in language description and teaching in China (likely also elsewhere), and

these traditional grammatical approaches focused mainly on prescribing the rules of language rather than on how language is actually used in various contexts and why language works the way it does (questions that contemporary linguistic theories are particularly interested in as will be shown below). It is necessary to note that prescriptive grammar and structural grammar, though just mentioned together, are actually very different. Prescriptive grammar is not really a linguistic theory, but only an approach aimed to dictate how language should be used by prescribing rigid rules. Structural grammar, on the other hand, is a well-known linguistic theory aimed at a scientific description of language by treating language as a precise but static system of interconnected structural units. However, the two approaches are similar in that they both focus on form and pay little attention to language meaning and use in context. Another point worth noting is that I gave no citation in my above mentioning of prescriptive grammar because, unlike other grammars, it was not developed by one linguist or a group of linguists, although several individuals have often been mentioned in the discussion of prescriptive grammar for having each allegedly created a well-known prescriptive rule, e.g., John Dryden for starting the rule of not ending a sentence with a preposition (*Merriam-Webster's Dictionary of English Usage*, 1994).

Now let us return to the influence of prescriptive grammar on language teaching in those early days of my career. I remember learning many prescriptive English grammatical rules then. Here are just two such rules I learned from my preparation study for the TOEFL test: (1) the plural possessive pronoun *their* should never be used with a singular subject as shown in the following "erroneous" sentence "*Everyone* should do ~~*their*~~ best" and (2) only the preposition *from* should be used after the adjective *different*, i.e., it should be *different from*, not *different* ~~*than*~~ something. The following sample question from Rudman's (1981) TOEFL test preparation book (an American publication) helps illustrate my point. In this type of question, a word or structure that is considered erroneous is underlined and the test taker is asked to select, from five provided choices, the correct form for the underlined word or structure (Rudman, 1981, p.3 of test 1, question 7):

> Leisure promotes health, efficiency and happiness, for there is time for each individual to live their own "more abundant life."
> 1. their 2. his 3. its 4. our 5. your

The correct answer, according to Rudman, is of course "his," not "their" for the reason mentioned above. As a result of this type of learning and teaching of grammar and language in general, my queries for answers to English usage seldom ended with fully satisfactory answers either from grammar books or my teachers. In fact, a common answer I received was something like the following: "This (specific usage) is just how it is used in English. Don't ask why. Just memorize it." Unfortunately, despite my dissatisfaction with or even disdain for such an answer, it also became a frequent reply I gave to my students concerning questions I did not know the answer to. It is thus clear that my fascination with grammar and vocabulary usage issues then was also often accompanied by frustration.

This interest and the accompanying frustration of mine continued after I came to the United States in 1985 to pursue graduate studies, first working on a master's degree in TESOL at Oklahoma City University (OCU) and then a Ph.D. in English at Oklahoma State University. Apart from my coursework in English studies, two other reasons helped keep me interested in lexis and grammar issues. First, I noticed that some of the prescriptive English rules I had learned were not actually followed by native English speakers. Beside the aforementioned prescriptive rules of "no use of *their* after a singular subject" and "no use of *than* after *different*," we had also learned that *few* and *fewer* were used for modifying count nouns whereas *little* and *less* were for modifying non-count nouns. Yet, what I was hearing or seeing in America related to these usages or rules was not what I had learned. The plural "their" was actually very frequently used with the singular subject *everyone* or *everybody*; *different than* was also fairly common; and finally the non-count quantifier *less* was constantly used to modify the count noun *item* in the grocery store and supermarket signs for directing customers to the right checkout lanes: "Ten items or less this lane" or "Twenty items or less this lane." Several times, I really wanted to talk to the store managers about this glaring "grammatical error" in their signs, but I am glad I did not, for I am sure it would not have had a very happy ending. Another reason that kept me interested in grammar and vocabulary issues then was that often when I asked my American friends (including fellow Ph.D. students in English) questions about an English grammar and vocabulary usage issue, they would give me an answer similar to the aforementioned "helpless" one but with a much more authoritative tone: "This is just how we say/use it." Also, as was the case in China, the dictionaries and grammar reference books in the U.S. then were not very

helpful either. Of course, corpus linguistics was still little known and there was no searchable corpus available for language learning and teaching for the general public.

My interest in grammar and vocabulary usage issues grew stronger after I became an assistant professor and Director of the MA TESOL program at OCU in 1991. A main reason for this increased interest was that two of the regular required courses I was teaching in the program were English Structure and Usage and Introduction to Linguistics. Teaching these two courses forced me to think a lot more about English grammar and vocabulary usage questions. It is also important to mention that at that time Halliday's (1985) systemic functional linguistics/grammar (SFL)[1] and sociolinguistic theories such as Hyme's (1964, 1974) ethnography of communication (where the concept of communicative competence emerged) had become well-known and replaced structural grammar and Chomsky's (1957, 1965) generative grammar as arguably the most influential linguistic theories.

Before I discuss Halliday's SFL and Hyme's communicative competence theory, I need to explain why I have not mentioned generative grammar until now. While generative grammar once was and perhaps is still a very influential linguistic theory today, it has not really had a great impact on L2 learning and teaching, at least not the kind of impact that prescriptive and structural grammars once had. The only influence it has had was on some quite formal SLA theory issues, such as the accessibility of Universal Grammar in L2 acquisition (e.g., White, 1985, 1989) and Krashen's (1981) differentiation between language acquisition as an unconscious input-driven process (a Chomskyan theory) and language learning as a conscious formal learning process. Also, as a linguistic theory, generative grammar focuses on language as a system of rules (especially syntactic rules), i.e., it concentrates on how syntactic rules help organize words into grammatically correct sentences. In short, generative linguistics focuses on form and pays little attention to meaning, just like structural grammar. Furthermore, like other traditional linguistic theories, generative linguistics treats lexis and grammar as two rigid, separate domains, a practice that, as I will show below, has been rejected by contemporary linguistic theories.

Unlike structural and generative linguistics, Halliday's SFL treats language as a social semiotic system, a system of choice that language users make for social interaction. It places language function, not form, at the center of language study by exploring how language speakers make lexico-

grammatical choices in the language system to communicate meaning and fulfil social functions. SFL rejects the rigid division between lexis and grammar by adopting a lexico-grammatical approach to the study of language. It is necessary to mention here that SFL is just one of a group of linguistic theories and approaches called functional linguistics, e.g., Simon Dik's (1980) functional discourse grammar and Talmy Givón's (1984) functional-typological grammar. Yet, SFL is arguably the most comprehensive and most influential one of the various functional grammars. Concerning sociolinguistics, although it is just one branch of linguistics, its focus — the interaction between society/culture/context on the one hand and language use/function/meaning on the other — is a prominent area of interest also in SFL. Together with SFL, sociolinguistic theories including those of pragmatics, e.g., Austin's (1962) Speech Act theory and Hymes's communicative competence theory, helped engender profound changes in language teaching in the 1970s and 1980s as evidenced by the shift of language teaching from being form-focused to being function and meaning-centered, culminating in the ascendance of Communicative Language Teaching as the most dominant language teaching method in the 1980s and 1990s.

As a result of my reading of and interest in sociolinguistic and functionalistic theories in my early days at OCU, my research work focused on culture and language function-related issues, leading to several publications on these topics, including a journal article on Chinese English learners' pragmatic transfer and its impact on their communication (Liu, 1995), a journal article on Chinese EFL learners' acquisition of culturally-loaded words (Liu & Zhong, 1999), a book about cultural influences on Chinese and Americans' use of metaphors (Liu, 2002), and a journal article on ESL learners' acquisition of the definite article *the* based on the four key semantic functions of the article (Liu & Gleason, 2002). A key issue from my and others' sociolinguistics-based research is that a solid grasp of L2 vocabulary often requires a good understanding of L2 culture because the latter often greatly shapes the meanings and usages of L2 words. For example, the word *old* in Chinese can be both negative and positive (e.g., Li Old or 李老, a very positive, prestigious term), but *old* is extremely negative in English due to Western culture's obsession with youth. Thus, Chinese EFL/ESL speakers must be very careful in their use of this culturally loaded word, never to say to a senior person in need of help, "You are old. Let me help you" (something many Chinese ESL/EFL speakers actually often say for not knowing

the negative connotation in the utterance and the serious consequence it may entail). As another example, *propaganda* (宣传) is positive in Chinese but extremely negative in English and, hence, should be avoided. However, many Chinese ESL speakers do not seem to know this, for, a couple of years ago, in the announcement of the new leaders of the Chinese Students' Association at the university I teach, one student was unfortunately listed as "Head of *Propaganda*." For one more example, while eating is a dominant source of idioms in Chinese (e.g., 吃苦,吃亏,吃香, 吃透,吃惊,吃紧), sports are a prominent source of idioms in American English (e.g., *drop the ball/keep one's eyes on the ball/play hardball/struck out/touch base*). Because of this, it will be very helpful for ESL/EFL learners to gain some knowledge of American sports as doing so should help them learn English idioms and in turn enhance their English proficiency.

While working on sociolinguistics and functional linguistics-related issues, I was also exploring other research theories and approaches to help enhance my research on the description and teaching of lexis and grammar. In the process, I was very excited to read about corpus linguistics and was amazed at what it could do. Corpus linguistics is the study of language by examining a collection of natural language data, often in the form of texts. Because of its exclusive focus on language data, corpus linguistics is considered by some to be more of a linguistic approach than a linguistic theory. However, even if it is merely an approach, corpus linguistics is a very principled approach based on several important linguistic theories and assumptions about language, including (1) language is usage-based rather than innate, (2) language rules and usages may change over time and across contexts, and (3) lexis (i.e., vocabulary) and grammar are not two rigidly separated domains (Gries, 2008; Sinclair, 1991), but are two ends of one continuum, forming what is known as lexico-grammar.

However, although corpora have been in use in paper form for a long time, corpora in electronic form have only about 50 years of history. Their wide use in language description did not become a reality until the late 1980s. Since then, thanks to the rapid advancements in computer technology and corpus linguistics, corpora, including mega-sized online corpora along with sophisticated corpus search programs, have gradually become available or accessible in many households and classrooms, making the use of corpora in language description and teaching now a widely used practice. Essentially, today's corpora and corpus search programs can allow us to query for and obtain almost any language usage information we

need so we may quickly and fairly easily identify language usage rules and patterns not only in today's English but also in historical English whenever a historical English corpus is available. In other words, corpora today may provide us with the information we need to accurately describe language usage patterns and rules. In fact, quite a few useful corpus-based reference books, textbooks, and word lists had already emerged by 2000 (e.g., Biber, Johansson, Leech, Conrad, & Finegan, 1999; Coxhead, 2000; Francis, Hunston, & Manning, 1996, 1998; Leech, 2000). These corpus-based publications can replace those old existing reference and teaching materials that often contain inaccurate and useless language usage information. Furthermore, and perhaps more importantly, corpora may also be used to engage English learners in active inductive language learning where they observe and analyze corpus data to uncover language usage patterns and rules by themselves (Aston, 2001; Burnard & McEnery, 2000; Johns, 1991a, 1991b; Sinclair, 2004).

Encouraged by what corpora could do, I started shifting my research to corpus-based language description and teaching. My work soon yielded some important results. One was the publication of a journal article on the most frequently-used Spoken American English idioms (Liu, 2003). Idioms are a very useful, albeit challenging aspect of language for ESL/EFL learners. Many of the idiom reference books and textbooks then were developed based on intuition and hence contained many outdated and seldom used idioms. My article made an important step in addressing this problem. Another result of my work was the award of a 2005 grant from the TESOL International Research Foundation (TIRF) to conduct research on the use of corpora to teach English, using a lexico-grammatical approach, both in China (at my alma mater) and in the U.S.

Another important event in my career also occurred at this time. In 2006, I left OCU and took a position at the University of Alabama (UA) as the coordinator of the Applied Linguistics/TESOL program in the English Department. Although I was already a full professor at OCU, I made the move because UA is a research university and, as such, it would give me more time and resources to conduct research, something that I enjoy and have a strong passion for. Indeed, the move has enabled me to focus more on research and led to many more publications on corpus-based descriptions and teaching of English lexico-grammar in various international journals, such as *English for Specific Purposes*, *International Journal of Corpus Linguistics*, *Journal of English Linguistics*, *Modern Language Journal*, and *TESOL Quarterly*.

While many of these journal articles (e.g., Liu, 2008a, 2008b, 2008c, 2010b, 2011b, 2012a; Liu & Espino, 2012) provided more accurate descriptions of some important English lexico-grammatical items, such as linking adverbials and multiword constructions, three of the articles (Liu, 2011a; Liu, 2013b; Liu & Jiang, 2009) were studies on the use of corpora to teach English lexico-grammar. The results of the studies showed that corpus-based teaching made lexico-grammar teaching more engaging and empowering for many of the participating students as data-based language learning helped these students become more autonomous learners. However, like other studies on corpus use in language description and teaching (Biber, Conrad, & Reppen, 1998; Boulton, 2009, 2010; Yoon & Hirvela, 2004), my studies also revealed some issues and challenges faced in corpus-based language description and teaching.

In terms of corpus use in language description, the following four issues are arguably the most important to consider.

1. How to ensure that the data of the corpus used in a study are actually representative of the language being investigated. For example, for a corpus of written academic English, one has to select academic texts in a very principled way by selecting an equally representative number of texts from each of the major academic disciplines and divisions. This is not an easy task, however, because there are numerous academic disciplines. Which ones to include, how to group them into divisions, and how many disciplines and divisions to include are just some of the challenging questions involved.
2. How to accurately identify the lexico-grammatical items targeted for the purpose of a study. Corpus analysis is often complex because corpus queries frequently generate false or irrelevant tokens. Moreover, generated corpus results, often in the form of concordance lines (as shown in Figure 1 below), do not themselves tell us the lexico-grammartical usage pattern or rule we are interested in identifying. The researcher needs to closely observe and analyze the data and then draw a conclusion based on the data analysis. Even in the simple example shown in Figure 1, which displays the result in Davies's (2008-) Corpus of Contemporary American English (COCA) from a query regarding the typical nouns used after the verb *pay*. If the person wants to learn how *pay* is used as a verb, the person, besides knowing *attention* is the typical noun used as its object, will also need to find out from the concordance lines that the preposition *to* is often required after the noun *attention* and that a noun phrase or noun clause is needed after *to*. Obviously, corpus analyses usually involve much more complex and demanding tasks than this one.

Figure 1: Sample of concordance lines with *pay* as a verb followed by its typical object nouns in COCA

3. How to balance the major factors in the actual description of the lexico-grammatical features or items identified in a study. The feature or usage pattern identified in a study is often very complex. Describing it thoroughly may end up with a description that is too difficult for the language learner. Therefore, how to describe and present a usage pattern or rule, including how thoroughly, may often need to vary based on the proficiency level and the purpose of the learner. For example, in describing the semantic usage pattern of the preposition *on*, it is surely appropriate to present a thorough description for advanced learners, but for low and lower level learners, a description covering only the major semantic functions will be much more desirable.
4. How to select the most useful items in developing a word list. In developing a vocabulary list, one has a series of difficult decisions to make, including those regarding the frequency, the range distribution, and degree of dispersion of the items being selected as well as how many items to include in the list. This is because while we want to make sure the items chosen all have a very high frequency and a wide distribution range, we do not want to end up with a list that has too few items, an undesirable result that would happen if the frequency, range, and dispersion measures are set too high.

Now let us move on to the challenges in the use of corpora in language teaching. Before we do so, it is necessary, though, to point out that the use of corpora in language education can be divided into two categories: indirect and direct use (Römer, 2011). Indirect use refers to using corpus data or the results of corpus studies to develop teaching materials, including textbooks, tests, dictionaries, and word lists. Thus, all of the corpus-based language

description studies are examples of indirect uses of corpora for language teaching, including my studies on the most frequently used spoken American English idioms, academic multiword constructions, and phrasal verbs. Direct corpus use, on the other hand, refers to having students engage in corpus queries and analysis, often in the form of examining concordance lines like those in Figure 1 above. The following are some key challenges found in the direct use of corpora in language learning and teaching.

1. Corpus analyses may be too time-consuming.
2. Corpus data often contain words and sentence structures too difficult for students, especially low and lower level students.
3. Data-analysis sometimes requires cognitive and/or analytical skills that students do not have.
4. Some learners do not enjoy data-driven learning and their negative attitude may affect the other students.
5. There is often a lack of technological resources and/or support needed, e.g., not enough computers and a lack of or no reliable access to online corpora.

It is important to note that some dedicated language educators have confronted these challenges and come up with a few successful solutions to some of the problems. For example, Boulton (2009, 2010) has designed successful corpus teaching lessons in which lower level students simply used and analyzed teacher-generated concordance lines on paper printouts. This innovative teaching practice not only makes computers and corpus queries unnecessary but also enables low level learners to engage in successful corpus-based learning. It is clear that if we are willing to try, we will be able to find ways to overcome many of the challenges found in corpus-based language learning.

Now I would like to turn to cognitive grammar or linguistics, a new contemporary linguistic theory consisting of a family of interrelated approaches to the study of language developed by Langacker (1987, 1991), Fillmore (1985, 1988), and Goldberg (1995), among others. I came upon and became interested in this theory during my second year at UA. Four key tenets of cognitive linguistics help make this linguistic approach unique and appealing.

1. It considers meaning central in language. In this sense, it is quite similar to functional linguistics, but it differs from the latter in that it holds cognition

to be the key to our understanding of the world and our use of language as everything we know and discuss is mediated by the human mind.

2. Language is a symbolic system based on human conceptualization, which is in turn based on our embodied experience and, as such, it is made up of symbolic units or constructions, i.e., parings of form and meaning that can be as small as a morpheme (e.g., the plural *s*) and as large as a clause (e.g., *what's up* as a greeting). This view of language rejects the traditional view of grammar and lexis as two separate domains.
3. Language knowledge is not innate as generative linguistics posits; rather it is usage-based and language learning is thus also usage-based;
4. Because language is a symbolic system based on human experience and conceptualization, language is generally motivated, rather than arbitrary.

These theories have profound implications for language learning and teaching. For example, the theory of language being a symbolic system composed of symbolic constructions will require us to focus on constructions, including filled constructions (fixed idioms) and semi-filled and unfilled (i.e., abstract) constructions. For example, acquiring the Cause-to-Receive Verb+Noun+Noun construction will allow learners to understand and produce less prototypical sentences in this construction, such as "Tom knitted Mary a sweater" and "Mary cooked Tom a dinner." Even though the verbs *knit* and *cook* do not have the meaning of *give*, the learners will know that when used in this V+N+N construction, the two verbs automatically inherit the giving meaning.

Also, the theory that language is usage-based dictates that teachers must do everything possible to engage learners in adequate meaningful use of language in real language usage context. With language being motivated, language teaching may need to focus on exploring the motivations of language usages because such exploration should make language learning more interesting and engaging and in turn more effective. Here is an example to help illustrate this point: based on cognitive linguistic analysis, we conceptualize and express time in spatial terms (e.g., *at/before/after 12* and *in the morning*). This understanding of our conceptualization of time in spatial terms would in turn help us better explain why we often use the past tense in talking about the present, e.g., "*Could you help me?*" and "*Here is an article I thought you might like to read.*" The use of the past tense for the present helps create space by putting the present event in the past, hence making the request or comment in question less immediate and hence less imposing. More importantly, some empirical studies have already provided

evidence for the effectiveness of cognitive linguistic theory-inspired teaching practices (Boers, 2000; Kövecses & Szabó, 1996; Tyler, 2012).

What I found even more interesting in my reading of cognitive linguistic research was that corpus linguistics and cognitive linguistics could be combined to help make language research more valid and reliable and hence make language description more accurate (Gries, 2008; Grondelaers, Geeraerts, & Speelman, 2007). The main reasons for combining corpus linguistics and cognitive linguistics in research are as follows. Both approaches are meaning-focused and usage-based and they both reject the traditional rigid separation of lexis and grammar. Furthermore, the two approaches often offer each other what they need: while corpus linguistics provides cognitive linguistics with the very kind of language data it needs for analysis to support its theories (Gries, 2008), cognitive linguistics offers corpus linguistics theories the latter may need in guiding its data analysis and conclusion drawing (Liu, 2012b).

Armed with this new combined approach, I conducted several studies, which resulted in the publication of a journal article on the use of corpus-based cognitive analyses to help teach collocations more effectively (Liu, 2010a) and two journal articles of the use and acquisition of synonyms (Liu, 2013a; Liu & Zhong, 2016). Like idioms and other multiword expressions, collocations are another very difficult aspect of language for L2 learners. Historically, collocations have been described and taught as arbitrary expressions and students have been taught to learn collocations mainly by memorization. Contrary to such historical beliefs and practices, my corpus-based cognitive analyses indicate that common English collocations such as *heavy rain*, *strong wind*, *power cars*, *strong tea*, and *make a change/decision* are actually motivated, rather than arbitrary, as they are each based on the core meanings of the words involved and on our embodied expression; given the motivated nature of collocations, the teaching of collocations should focus on their motivations (Liu, 2010a). Synonyms are also very difficult to learn. My cognitive analyses (Liu, 2013a; Liu & Zhong, 2016) of both corpus data and elicited data of several sets of synonymous nouns and adverbs reveal not only the fine-grained differences among the synonyms in each set, but also how both native and ESL speakers made their selections among synonyms. The results show that salience (conventional usages) and construal (how the speaker/writer views the communication task and context at hand) are two key factors in synonym use. These findings suggest that in synonym learning, students

should begin with the most salient usage/choice and then move onto the less salient ones before learning unconventional synonym choices called for by a unique construal.

It is important to note here, however, that although there have been some successful studies on the use of cognitive linguistics-inspired language teaching practices (Boers, 2000; Tyler, 2012), the application of cognitive linguistics to language teaching is still a relatively new endeavor. The cognitive analyses involved in language learning entail many of the same challenges found in corpus-based analyses. This is especially so when we conduct cognitive analyses using corpus data (i.e., when we combine corpus and cognitive approaches in a study). Obviously, a lot more empirical research is needed to try and test cognitive linguistic theory-inspired language teaching, especially when it makes use of corpus analysis.

By now, I hope I have not only clearly delineated my decades-long quest for better and more effective ways of describing and teaching English lexico-grammar, but also in the process highlighted the major issues and changes that have occurred since the days when language description and teaching were dominated by prescriptivism and structuralism. The following chapters (with the exception of the Conclusion chapter) are the author's representative studies on the description or teaching of English lexico-grammar issues published in journals within the last twenty years. These studies employed or were guided by one or more of the contemporary linguistic approaches, including SFL/sociolinguistics, cognitive linguistics, and corpus linguistics in particular. As such, these studies may help show the advancements in language description and teaching guided by contemporary linguistic theories and approaches in the last two decades. The theoretical approach(s) used in each of the studies will be clearly indicated at the beginning of the chapter if the title of the chapter does not explicitly shows it. Also, as you will see, these included studies cover a variety of lexico-grammatical topics, especially those that have been found to be particularly challenging for ESL/EFL English learners, such as the learning/use of the English article *the*, culturally loaded words, synonyms, idioms, phrasal verbs, other multiword units, and object deletions in English. Furthermore, while most of the chapters focus on corpus-based descriptions of lexis and grammar, several are empirical studies that investigated how lexico-grammatical items were acquired and their pedagogical implications. Still a few other chapters explore how contemporary linguistic theory-inspired teaching practices

may help enhance our teaching effectiveness. To help the reader better understand the major issues addressed in the author's published studies, the chapters are organized into three theme-based parts: (I) "Describing and teaching challenging lexico-grammatical issues;" (II) "Describing and teaching difficult lexical usages;" and (III) "Developing useful corpus-based vocabulary lists for language learning and teaching."

Notes

1. In the strict sense, systemic functional grammar and systemic functional linguistics (as is the case with all the other applicable pairs, including generative grammar and generative linguistics) are not the same thing, as the latter is a broader term referring to the whole theoretical approach or system of which systemic functional grammar is a part. Yet, for simplicity and discussion purposes, the two are sometimes used interchangeably. For the same reason, the two terms in each pair are also used interchangeably in this chapter and the book.

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Part I

Describing and Teaching Challenging Lexico-Grammatical Issues

Chapter 2

A Study of the Acquisition of the Article *the* in Nongeneric Uses and Its Pedagogical Implications

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INTRODUCTION

Because of its high complexity and frequent use, the English article system, which includes the indefinite article *a(n)*, the definite article *the*, and the zero (or "null") article,[1] is one of the most difficult structural elements for ESL learners. In fact, it has often been considered hard grammar, very difficult if not impossible to teach (Dulay, Burt, & Krashen, 1982). A survey conducted by Covitt (1976) ranked the teaching of English article usage first among difficult tasks for ESL instructors. Quite a few ESL educators have explored different approaches and techniques for teaching article usage and examined the effectiveness of such instruction (Master, 1988a, 1988b, 1990, 1994, 1995; McEldowney, 1977; Pica, 1983b; Whitman, 1974); a few others (Huebner, 1983; Master, 1987a; Parish, 1987; Tarone & Parish, 1988; Thomas, 1989) have investigated the process of L2 acquisition of English articles, an issue that we believe deserves more attention. Because of the extreme complexity of the English article system, this study attempts to examine only one aspect of its acquisition, namely, the various nongeneric uses of the definite article *the*. We chose to focus on the use of the definite article because of its wide variety of usage and its higher frequency of use than the indefinite article *a(n)*.[2] Being limited to the nongeneric uses of the definite article and drawing largely from pedagogical research in ESL, this study is narrow both in its theoretical frame and the research methodology employed. The narrow scope of the study does not, however, diminish its importance because a better understanding of the acquisition process of *the* should in turn lead to more effective teaching and learning of this difficult article.

LITERATURE REVIEW

The English article system has long been a subject of interest for linguists, given its complex usage and the difficulty involved in analyzing it. Although some earlier studies (Christophersen, 1939; Jespersen, 1949) made significant contributions to our understanding of the issue, Bickerton's (1981) work is arguably the most important and enlightening, as it renders a new and unique systematic approach to the analysis of the use of the English article system. According to Bickerton, the use of the English articles — *a*, *the*, and zero — is governed by the semantic function of the noun phrase (NP) in discourse. The classification of the semantic function of an NP is then determined, he argued, by two binary discourse features: (a) whether a noun is a specific referent (SR), and (b) whether the hearer knows the referent (HK). Based on such an analysis, NPs fall into four major semantic types.

Type 1 is [−SR,+HK], also known as "generics," where the indefinite, the definite, or, if the noun is plural, the zero article is used. For example, *a/the tiger is a fierce animal*. Type 2 is [+SR,+HK], where the definite article is required. It includes four subcategories: (a) unique referent or conventionally assumed unique referent, such as *the Pope*; (b) referent physically present, as in the example *Pass me the pepper please*; (c) referent previously mentioned in the discourse; and (d) specific referent assumed to be known to the hearer (e.g., a resident in a small village with one church tells another resident, "My wife is at the church"). Type 3 is [+SR, −HK], where the indefinite or, if the noun is plural, zero article is called for. There are two subcategories in this type: (a) first mention in the discourse of an [+SR] NP assumed to be unknown to the hearer, as in *Tom bought a car*; and (b) first mention of an [+SR] NP that follows existential *have* and is assumed to be unknown to the hearer, as in *My computer has a new sound card*. Type 4 is [−SR, −HK], where the indefinite or, if the noun is plural, zero article is required. This type consists of four subcategories: (a) equative NPs, as in *She is a single parent*; (b) NPs in a negation statement, as in *I don't have a car*; (c) NPs in an interrogative sentence, as in *Do you have a pen?*; and (d) NPs in hypothetical statements, as in *If I had had more money, I would have bought a new car*. This classification illustrates clearly that the four semantic types of NPs each have different discourse and referential constraints and thus call for the selection of a specific article or articles from among *a*, *the*, and zero to mark these constraints. It is this knowledge of the semantic types

of NPs and the article(s) used with each type that enables English speakers and writers to mark the NPs in discourse with the appropriate articles.

If the grasp of the use of the English article system entails a command of the discourse and referential constraints on NPs, the acquisition of the article system must in turn involve the learning of these constraints — a task that research has shown, directly or indirectly, to be especially challenging, albeit possible, for L2 learners. Research on article acquisition in ESL falls into two areas: pedagogy and its effectiveness on the one hand, and the process of acquisition on the other. In the first category, some scholars (Covitt, 1976; Dulay, Burt, & Krashen, 1982; Grannis, 1972) have pointed out the complexity and the seemingly insurmountable difficulty of the English article system, whereas a few others (Master, 1994, 1995) have managed to show that systematic teaching of the article system can help students to grasp it more effectively. The results of Master's (1994) 9-week pedagogical intervention study showed that, whereas ESL students who received systematic instruction on the use of articles significantly improved their performance on article usage, those who did not receive such instruction did not. In another study involving 19 advanced ESL students enrolled in a Master's degree-level Applied Linguistics-TESOL course, Master (1995) had the students write a series of reading summaries, corrected their errors in article usage as feedback, and conducted brief classroom discussions on the most frequent errors. The course was divided into four successive periods of three to four weeks for the purpose of data analysis. The results showed a significant decrease in the number of article errors the students made between periods 1 and 4.

Concerning research on the ESL article acquisition process, some studies (Hakuta, 1976; Huebner, 1979, 1983; Tarone, 1985) were not specifically on article acquisition but on acquisition of grammatical morphemes in general. Only Master (1987a), Parish (1987), Tarone & Parish (1988), and Thomas (1989) studied the acquisition of articles exclusively. Research in both categories has yielded some significant findings. The early studies of ESL use of articles looked mostly at the presence or absence of articles in obligatory contexts. In scrutinizing a Japanese child's acquisition of English morphemes, Hakuta (1976) found two types of errors in the subject's article usage, termed "error of omission" (no use of an article in an obligatory context) and "error of commission" (use of an article in a context where the zero or null article is used). In a longitudinal study of a Laotian ESL learner, Huebner (1979) employed a dynamic paradigm method in analyzing the changing functions of his

subject's use of the definite article. The results showed that the learner's grasp of the article was gradual, first in one linguistic environment or function and then spreading to other environments and functions. In other words, the learner's use of articles, though systematic, varied from one linguistic environment to another and such variation led to change and development in the grasp of the system. Also investigating L2 variation, Tarone (1985) examined ESL students' grammatical accuracy on different tasks, such as grammaticality judgment, oral interview, and oral narration, whereby she found that the subjects' accuracy in the use of morphemes (including articles) varied significantly from task to task.

Huebner (1983) opened up a new avenue of research on ESL article acquisition by employing Bickerton's (1981) noun classification system discussed earlier. Unlike the traditional research that looked only at the presence or absence of articles in obligatory context, Huebner's analysis covers two more important issues: first, the various semantic functions or types of NPs and the article(s) used with each semantic type; and second, the development of ESL learners' grasp of the article+NP function relationship. Using the two binary features that Bickerton developed, Huebner classified the semantic functions of the NPs in his data. With this classification of nouns, one can examine the article(s) that an ESL learner uses with each type, thereby understanding the learner's use of articles in semantic context. Huebner's method of analysis thus allows researchers to gain a more in-depth understanding of ESL article usage than the method of examining only suppliance of articles in obligatory contexts. Tarone & Parish (1988) applied this new method in reanalyzing Tarone's (1985) data, whereby they discovered, among other things, an additional factor that may cause L2 language variation (i.e., variation in article usage): the different communicative functions that language plays.

In another study, Parish (1987) used Huebner's (1979, 1983) practice in combination with two other methods in studying a Japanese ESL learner's acquisition of the English articles over a 4-month period. One of the other two methods was an adaptation of Huebner's system. In addition to looking at which articles were used with each type of noun, the adapted method also examined the accuracy of the articles used. The third method Parish used was the traditional suppliance-in-obligatory-context analysis. With these three methods, especially the adapted method, Parish was able to ascertain whether the three articles (indefinite, definite, and zero) were acquired at the same time. Her data analysis indicated that the zero article was acquired

first, followed by the definite article, and finally the indefinite article. In one sense, Master's (1987a) study seemed to suggest the same sequence, that is, if one only looks at the percentage of articles correctly supplied in obligatory contexts. However, if one includes the overuse of articles in considering the accuracy of article use, one would have to revise the conclusion about the sequence, for the overuse of the zero article (therefore an underuse of *a* or *the*) by his subjects whose L1 did not contain an article system continued even at the advanced level. In fact, as Master (1997b) pointed out, the problems that such advanced learners have with the articles are limited mostly to the overuse of the zero article, particularly with a clearly identified referent (p.220). This overuse of the zero article and the underuse of *the* at the advanced stage would suggest that the two articles are acquired rather late, a hypothesis indirectly supported by Master's (1995) study.

Although the focus of Master's (1995) investigation was the effectiveness of instruction on students' acquisition of articles, his study yielded some findings on the sequence of article acquisition. His analysis of the errors that the subjects made revealed that the most frequent error was omission of the definite article, and, more importantly, this particular error "tended to increase as a proportion of total errors over time" (p.183). Given that the subjects were very advanced ESL learners (Master's degree-level TESOL students), it would suggest that *the* was perhaps acquired rather late in the ESL development of the article system. Another interesting finding from Master's (1995) study is that the frequently missed *the* was largely the result of the subjects' not knowing that certain NPs were unique in the speech community. In other words, most of their errors were related to what we consider unique referent or cultural use of the definite article, a concept we will explain shortly. This finding would imply that certain uses of the definite article might be more difficult than others, an issue that none of the existing studies seem to have investigated. Research so far has only examined the use of *the* as a whole, in comparison with the zero and indefinite articles, without looking at the learners' grasp of the various uses of the definite article. To do so, an informed discussion of the usage types of *the* is in order.

THE USE OF *THE*

It is generally accepted that the use of *the* first falls into two major categories: generic and nongeneric use (Celce-Murcia & Larsen-Freeman, 1999; Hawkins, 1978; Quirk, Greenbaum, Leech, & Svartvik, 1985). The

generic use of *the* refers to cases where it is used to mean either a species, a race, or people of a nation. It is usually used with a singular noun, as in *The German is very athletic*, although it may also be used, as some grammarians (Celce-Murcia & Larsen-Freeman, 1999; Christophersen, 1939) suggested, with plural nouns, as in *The Germans are very athletic*.[3] All other uses of *the* are considered nongeneric, which makes its use much wider and more frequent than the generic use. In fact, except in the scientific register, the generic use of *the* has been found to be very rare (Parish, 1987; Tarone & Parish, 1988; Whitman, 1974). Furthermore, the generic use of *the* in most instances can be replaced by the indefinite article *a(n)* if the noun is singular or substituted by the zero article if the noun is plural. The nongeneric use of *the*, on the other hand, cannot be replaced (in the case of a singular noun) or deleted (in the case of a plural noun). Furthermore, the nongeneric use of *the* is much more complex and hence more problematic for ESL students than the generic use.[4] Quite a few scholars (Celce-Murcia & Larsen-Freeman, 1999; Christophersen, 1939; Grannis, 1972; Hawkins, 1978; Quirk, et al., 1985) have wrestled with the difficult issue of classifying the complex uses of *the*. Hawkins's work deserves our special attention for the purpose of this study.[5]

Drawing on the work of previous scholars such as Christophersen (1939) and Jespersen (1949), Hawkins (1978) developed a rather comprehensive theory known as the Location Theory to explain the various uses of nongeneric *the*. He identified a total of eight types of nongeneric use (pp.106–149), listed here in 1–8:

1. *Anaphoric use*: use of *the* when something is mentioned a second time and subsequently (e.g., *Bill was working at a lathe the other day. All of a sudden the machine stopped running.*)
2. *Visible situation use*: use of *the* with a noun mentioned the first time to refer to something that both the speaker and the listener can see (e.g., *Pass me the bucket.*)
3. *Immediate situation use*: very similar to type 2, the only difference being that the thing referred to may not be visible (e.g., *Don't go in there, chum. The dog will bite you.* [Hawkins, 1978, p.112])
4. *Larger situation use relying on specific knowledge*: use of *the* with a first-mention noun because it is known in the community (e.g., people from the same village talking about *the church*, *the pub*, and so forth)
5. *Larger situation use relying on general knowledge*: use of *the* with something that one can assume people from a country or around the world should

know (e.g., *The White House* referring to the U.S. government; *the moon*)

6. *Associative anaphoric use*: basically the same as type 1, the only difference being that the first-mention *the* is used with a noun that is related to a previously mentioned noun, rather than being the same noun (e.g., *We went to a wedding. The bride was very tall.*)
7. *Unfamiliar use in NPs with explanatory modifiers*: use of *the* with a first-mention noun that has an explanatory or identifying modifier in the form of a clause, prepositional phrase, or noun (e.g., *The movies that are shown here now are all rated R; There was a funny story on the front page of the Guardian this morning; I hate the name Algernon.* [Hawkins, 1978, pp.139 and 147])[6]
8. *Unfamiliar use in NPs with nonexplanatory modifiers*: similar to type 7, the only difference being that the modifier does not provide explanatory information (e.g., *My wife and I share the same secrets,* where the modifier *same* does not inform us as to what the secrets are but "only points to an identity between the two sets of secrets, my wife's and my own" [Hawkins, 1978, p.148]). Here *same* is used as a unique adjective that always requires *the*. There are a few adjectives that can be used this way, such as *only* and *sole*.

Through these examples, Hawkins (1978) illustrated how his Location Theory operates. Basically, when an individual uses *the*, he or she invites the listener or reader to locate the referent by using provided or assumed known cultural, situation, structural, or textual information. In both anaphoric and associative anaphoric use (types 1 and 6, respectively), the listener or reader relies on textual information. In visible and immediate situation uses (types 2 and 3, respectively), the person makes use of information readily available within his or her sensory reach. Similarly, in type 4 (larger situation use relying on specific knowledge), people in a local community rely on information locally available. In type 5 (larger situation use relying on general knowledge), one identifies the referent by resorting to information considered unique and shared by all the people who speak the language, information we call cultural knowledge. In types 7 and 8, the person locates the referent by using structural information because such information lies in a modifier such as a prepositional phrase, a relative clause, or certain adjectives. Based on this theory, we believe that we can combine some of his categories and classify the nongeneric use of *the* into four major types. The first is cultural use, where *the* is used with a noun that is a unique and well-known referent in a speech community. The second is situation use, where *the* is used when the referent of a first-mention noun can be sensed directly or indirectly by the interlocutors or the referent is known

by the members in a local community, such as the only dog in a family or the only bookstore in a town. The third is structural use, where *the* is used with a first-mention noun that has a modifier. The fourth is textual use, where *the* is used with a noun that has been previously referred to or is related to a previously mentioned noun.

Although Hawkins (1978) included what we call cultural use in the situation category, we believe it should be a separate type because, although such use shares some characteristics with situation use, it differs from the latter in two important ways. First, whereas situation use (what Hawkins calls immediate situation use [type 3] and larger situation use relying on specific knowledge [type 4]) refers to instances where the referent is within the view of the interlocutors or is known to everyone in a community, cultural use (larger situation use relying on general knowledge [type 5] in Hawkins's terms) does not have that luxury. Instead, the interlocutors have to assume and resort to a shared knowledge in the entire language community to make such use functional. Second and more importantly, such use of *the* is often not framed by situation but is determined, to a large extent, by conventional practice. For example, we use *the* with some but not all disease names. Similarly, we place *the* before some geographical names (such as rivers) but not others (such as most lakes). We also use *the* with the musical instruments we play but not with the sports we play, for we can say *play the piano* but not *play the basketball*. Of course, the use of *the* in these circumstances is not completely arbitrary but often governed by rules.[7] Yet unlike in the other uses where the rules are simple (e.g., one rule for textual use is that the referent must have been previously mentioned directly or indirectly; one rule for situation use is that the interlocutors need to sense or know the referent), the rules in cultural use are often too complex and numerous, and, more importantly, they are shaped largely by convention, a point that can be made more obvious if we compare the rules with those of some other languages (cf. the use of the definite article before names of provinces or states in French but not in English). The term "cultural" thus best captures the nature of *the* so used.

Halliday & Hasan's (1976) discussion of the meanings of *the* seems to support our classification system:

> Its [*the*'s] meaning is that the noun it modifies has a specific referent, and that the information required for identifying this referent is available ... It does not say where the information is to be located. It will be found somewhere in the environment, provided that we interpret "environment" in the broadest sense

> to include the structure, the text, the situation, and the *culture*. (p.74, emphasis added)

Therefore, in Halliday and Hasan's view too, culture is a source distinct from situation. Huebner's (1983) classification of the use of *the* with the four subcategories of type 2 NPs is also similar to ours except for four differences. Huebner's first use in his system — unique referent or conventionally assumed unique referent — belongs to what we call cultural use because, as pointed out earlier, what is assumed to be unique is often culturally based. Huebner's second type — referent physically present — falls into our situation use. The third — referent previously mentioned in the discourse — equals our textual use. His last one — specific referent assumed known to the hearer — is in fact part of situation use, where something is well known in a community (e.g., *The furniture store [first-mention] was robbed yesterday*). Huebner did not include in his analysis what we call structural use, a use that has a fairly high frequency of occurrence. Thus our classification of *the* is both more complete and concise and should therefore serve as a useful system for helping us examine ESL learners' use of *the*. In this study, we aim to determine if the four types of use of *the* specified here are equally difficult for ESL students and are acquired simultaneously. Our hypothesis is that, because the four types of use vary considerably in context and rule complexity, they will not be equally difficult for ESL students and hence not acquired at the same time.

THE STUDY

Participants

The participants included 41 low-, 49 intermediate-, and 38 advanced-level ESL students. The 41 low-level students were from intensive English programs at several universities in the Oklahoma City metropolitan area. Most of them were college bound, and none of them had a TOEFL score above 500, as required by most colleges. Although most of them had been in America for less than a year, many of them had studied some English in their home country. Their average length of English study was 4.41 years. The intermediate and the advanced students were undergraduate and graduate students attending a university in Oklahoma. They all had a TOEFL score of 500 or above and were given a cloze test to demonstrate their current English proficiency. The cloze test consisted of 60 blanks with each blank worth one point. Those who scored above 45 were placed in the advanced group, 71% of whom were graduate students. The rest were placed in the intermediate group.

The average length of English study was 6.31 years for the intermediate students and 9.95 years for the advanced students.

Instrument

The instrument (see Appendix I) consisted of 91 sentences. In 51 of the sentences, there were a total of 60 deleted obligatory uses of *the* (15 per category), with some sentences containing one and others containing more. The remaining 40 sentences were included as distracters or control items (10 per category). Because there had been no known instrument of this nature, serious efforts were made to ensure the instrument's validity and reliability. To attain validity, we followed authority and used great care and precision in developing the items and testing the instrument in a pilot study. We will discuss these validity procedures in detail after we briefly explain the instrument's reliability. As was the case with validity, the care and precision used in developing the instrument and the pilot study employed to test it were crucial in ensuring the instrument's reliability. To this end, we conducted a Kuder-Richardson 20 reliability test on the instrument — that is, on the subjects' accuracy performance on the instrument's 100 items. The test yielded a K-R 20 reliability of .843, a result indicating that the instrument indeed had good reliability. In developing the instrument, we first took great pains to make sure that the items were clear and appropriate. In writing the deleted obligatory *the* items, we first created sentences by consulting and following example sentences in Celce-Murcia & Larsen-Freeman (1999) and Hawkins (1978), and then simply deleted the obligatory uses of *the* we wanted to test from these sentences. This task, though demanding, was not too complicated compared with that of writing distracter items, especially those for situation and textual use. This is because writing distracters for cultural and structural uses was rather straightforward but finding distracters for situation and textual uses was not. As explained earlier, cultural use of *the* is often conventional. Not all names of places and diseases require the definite article. Therefore, for cultural distracters, we simply included names of diseases or places that do not take *the*, such as *polio* and *Yellowstone Park*. Similarly, not all NPs that have an explanatory modifier call for *the* (see note 6), so for structural-use distracters we used NPs that contained a modifier but did not require the use of the definite article (e.g., *Children growing up with both parents are healthier than children growing up with only one parent*).

Unlike in cultural and structural uses, the definite article is always required in situation and textual uses — that is, it is always required with a specific referent in a known situation or with a referent mentioned again. To develop distracters for situation use, we had to settle for sentences that involve a scenario whereby something is referred to in an immediate situation but cultural practice makes *the* unacceptable. For example, in sentence 89, *The game show host says to the contestant, "What's behind door number one?", the* is not allowed before *door number one* because such NPs take the null article, whereas phrases like *first door* take *the*. The definite article therefore becomes unacceptable here not because the referent is not known in an immediate situation but because of cultural practice. For textual-use distracters, we made use of sentences in which a noun appears twice but, in its second appearance, is used as a general reference rather than a reference specifically to what has been mentioned earlier (e.g., *At the zoo I saw several tigers. I think that tigers are beautiful animals*).

As for the test format, we did not leave blanks for the missing obligatory uses of *the* nor for the unnecessary *the* distracters. We simply asked the subjects to read the sentences and insert *the* wherever they deemed it necessary. Our rationale for not including blanks was that if we did, some of the students, especially the low-level students, might fill every blank with *the*, making the data very unreliable. Our decision turned out to be a good one for another reason, for some students placed *the* in places we had not expected (i.e., not in the distracters). It thus provided us with some additional useful data. After the instrument was completed, it was first given to 30 native speakers of English as a pilot test. Although none of the native speakers produced *the* unnecessarily, a few did miss *the* in 21 places where we expected it. Of those 21 places, 9 were each missed by only one subject and 2 by two subjects. A scrutiny of these latter 11 items indicated that the most likely reason for their omission was the subjects' carelessness, as can be seen in the following examples: *I look after a little girl and a little boy on Saturdays. The little girl is smart but [-] little boy isn't*; *My mother has a white dog and a black dog. The white dog is taller than [-] black one*. Because they were deemed careless errors and missed by less than 6.7% of the subjects (nine of them by only 3.3%), we kept the items with just a few minor changes to some of them. The other 10 items were each missed by between 3 and 5 participants.

A close analysis of these items suggested that, although carelessness on the part of the participants could also have caused these omissions,

two more likely reasons were item ambiguity and some participants' tendency to omit *the* in certain obligatory contexts, a problem already discussed in note 4. For example, four participants did not place *the* before *mumps* in *John nearly died of mumps when he was a little boy*. This could have resulted from what Rastall (1995) described as some speakers' tendency to omit *the* before certain disease names that have historically taken *the*. In another example, five participants did not furnish *the* before *sun* and *moon* in *We may not have much but we have sun in the morning and moon at night*. The omission might have resulted from the fact that the two words *sun* and *moon* here could mean sunlight and moonlight and, so used, they were common nouns that could be treated either as unique or nonunique (cf. *I've been in the sun for too long today* vs. *I've had a little too much sun today*). Because these 10 items were missed most likely because of their ambiguity or the participants' disagreement, as well as because they were missed by at least 10% of the subjects, we deleted them. We then had two colleagues read the revised instrument to further ascertain its accuracy and clarity before using it in the study. The subjects were given 1½ hours to complete the test, including the cloze test, and they were not allowed to use dictionaries.

DATA ANALYSIS AND DISCUSSION

Because reporting the participants' total accuracy scores (the number of items they marked correctly) is not highly meaningful for the purpose of our study, we have chosen to calculate and report the number of obligatory uses of *the* that the subjects missed and the number of unnecessary uses of *the* (those in the null article context) they used. For the former category, we first counted every obligatory *the* they failed to provide and then computed the subtotal for each of the four types of use. Each subject therefore received four scores in this category, corresponding to each use type. The scoring and tabulating for the latter category, on the other hand, turned out to be more complex than we had expected. As explained earlier, some of the participants furnished *the* not only in the distracters but also in many unexpected places. We included these unexpected uses of *the* in the total number because, whether expected or not, an unnecessary *the* was an error and, more importantly, examining it would help us understand better where ESL students are likely to overuse this article. Another problem we encountered was how to classify the different types of the overuse of *the*.

Although it makes sense to classify as cultural or structural those overuses of *the* in the cultural or structural distracters, such as *the Lake Michigan* (sentence 68) and *the children growing up ...* (sentence 27), it does not seem logical to categorize as situation or textual those overuses of *the* in the situation and textual distracters. For example, in the test item *At the zoo, I saw several tigers. I think that (the) tigers are beautiful animals*, the definite article is unnecessary because the noun *tigers* in the second sentence refers to tigers in general (generic use), not to the tigers previously mentioned. Such overuse is thus not textual but overuse with general reference nouns. As stated earlier, if a noun truly has a previous textual reference, *the* will be necessary, hence no textual overuse per se. The same can be said of *the* placed in the situation use distracters because, in these distracters, the noun is sensed or well known by both interlocutors, though cultural practice disallows the use of *the*. For example, *Chapter Twenty* in sentence 61 and *door number one* in sentence 89 are both in situation use, but conventional rules stipulate that such NPs take the null article (as opposed to NPs like *twentieth chapter* and *first door*, which take *the*). Given that the reason we do not use *the* with these nouns is cultural, we considered *the* placed before these nouns as cultural overuse.

Concerning the unanticipated overuse of *the*, some examples fall into the above mentioned three categories: cultural, structural, and general reference overuse. Others fall into the category of ungrammatical use, by which we mean those instances of *the* that were structurally unacceptable. Examples include *went the hiking* and *in the his book*. In short, there are four major types of overuse: cultural, general reference, structural, and ungrammatical. (For additional examples of our classification of the overuse of *the*, see Appendix II.)

MISSED OBLIGATORY USE OF *THE*

After we tabulated the results of the participants' performance, we calculated the mean of the missed obligatory uses of *the* in each of the four types of use for each proficiency level group. We then conducted a MANOVA using English proficiency as the independent variable on the three groups' means in each of the four types of use. The results reported in Table 1 show a significant difference on both the multivariate and univariate tests. The results supported our hypothesis that the four nongeneric uses of *the* are not equally difficult for ESL students.

Table 1: Results of MANOVA on missed *thes* across three levels in four use types

Multivariate					
Use Type	*Wilks' Lambda*	*df*		*F*	*P*
All four	0.44	8		15.37	0.00
Univariate					
Use Type	*Sum of Squares*	*df*	*Mean Square*	*F*	*P*
Cultural	166.39	2	83.20	10.14	0.00
Situation	354.74	2	177.37	25.27	0.00
Structural	406.00	2	203.00	47.58	0.00
Textual	364.86	2	182.43	62.06	0.00

We then applied a post hoc Tukey test to see where the differences lie among the three groups in each of the categories. The results are reported in Table 2 in subscript letters together with the groups' means and standard deviations. The group means with the same subscript letter indicate no significant difference between them, and means with different subscript letters are significantly different. Figure 1 is also provided to help illustrate the differences between the groups.

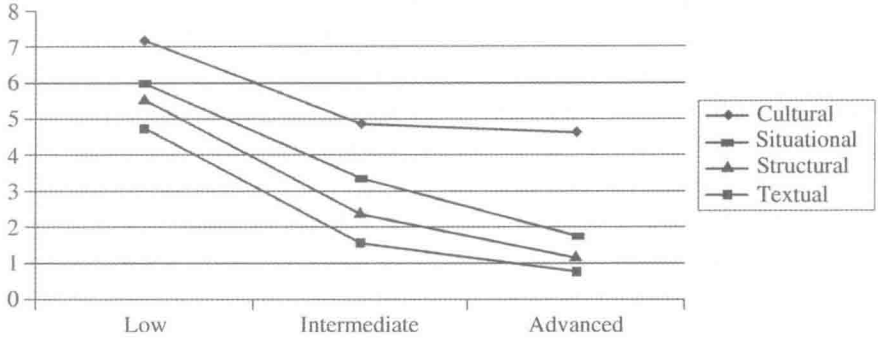
As can be seen clearly in Table 2 and Figure 1, the number of missed obligatory uses of *the* in all four types of use decreases as the participants' English proficiency level increases. More importantly, the Tukey test showed that the intermediate group's means in all four usage categories were significantly lower than those of the beginning group, which suggests an across-the-board significant decrease in missed articles from the low level to the intermediate level.

Table 2: Means, standard deviations, and Tukey's test results of comparison of the means between the groups

	Low (N+41)		Intermediate (N+49)		Advanced (N+38)	
Use Type	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Cultural	7.17_a	2.82	4.84_b	3.05	4.61_b	2.66
Situation	4.71_a	4.00	1.55_b	1.95	0.76_b	1.05
Structural	5.55_a	3.32	2.39_b	2.04	1.16_c	1.06
Textual	5.98_a	2.32	3.35_b	1.51	1.74_c	2.40

Note: Means with a common subscript are not significantly different by the Tukey's test where $p<0.05$.

Figure 1: Comparison of means of missed *the* by category



The comparison between the intermediate and advanced groups is somewhat more complex. Although the means of the advanced group were all lower than those of the intermediate group, the difference was significant in only two categories: structural and textual. The results suggest that, although ESL students' command of the structural and textual use of *the* continues to make significant improvement after their English proficiency passes the intermediate level, their grasp of the cultural usage and situation usage appears to have ceased improving significantly. A closer look at the latter two categories indicates, however, that the circumstances between cultural use and situation use were very different. First, whereas the mean of missed obligatory uses of *the* in cultural use decreased by only 0.23 from the intermediate level's 4.84 to the advanced level's 4.61, the mean in situation use fell by 0.79, about four times that of cultural use, from the intermediate group's 1.55 to the advanced group's 0.76. Second and more importantly, the advanced students still missed an average of 4.6 obligatory uses of *the* in cultural use but missed only an average of 0.76 obligatory uses in situation use. When the frequency of an error falls so low, the significance of the error also becomes minuscule. After all, language users, including native speakers, all make careless errors once in a while. Hence, although it is probably safe to say that the cultural use of *the* is still a difficult problem for advanced ESL students to wrestle with, it is perhaps not the case with its situation use.

Given that the MANOVA showed a significant difference among the four category means, we conducted a pair-wise *t*-test of the three groups' total means of missed obligatory uses of *the* in each of the four categories to determine if there is a significant difference between each possible pair. The results reported in Table 3 show significant differences between all pairs. The significant differences in turn suggest a hierarchy

of difficulty among the four types of usage, with cultural use being the most difficult followed in order by textual use, structural use, and situation use. The finding that cultural use is the most difficult supports the finding in Master's (1995) study, in which the largest number of errors with the article *the* were in cultural use. The discovery of situation use being the easiest suggests that, as far as this particular issue is concerned, the ESL acquisition of *the* follows the same process as in L1, for the function of *the*, according to Lyons's (1977) discussion regarding native speakers' grasp of it, "is *first learned* in actual situations-of-utterance with reference to entities present in the situation context" (pp.656–657; emphasis added). The finding that textual use is more difficult than structural use is, on the other hand, somewhat surprising. Theoretically, textual use, like situation use, is an easier concept to understand than cultural use and structural use. We have already discussed the extreme complexity of the cultural use of *the*. The structural use is also rather complex because not all NPs with an explanatory modifier require use of the definite article. Recall, for instance, in the sentence *Children growing up with both parents* ... no definite article is allowed before the noun *children* because the NP is a general reference. With textual use, however, the rule is rather simple. After something has been mentioned once, it becomes an object or person known to the interlocutors involved, so when it is referred to again, the definite article is required.

Table 3: Total means of missed *thes* by category and the results of pair-wise *t*-test

Total Mean of Missed *thes* by Category in Hierarchical Order							
Cultural		Textual		Structural		Situation	
Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
5.52	3.06	3.71	2.40	3.02	2.95	2.33	3.11

Pair-Wise *T*-Test Results			
Pair	*T Value*	*df*	*P*
Cultural vs. Situation	11.90	127	0.00
Cultural vs. Structural	10.17	127	0.00
Cultural vs. Textual	6.30	127	0.00
Situation vs. Structural	–3.33	127	0.00
Situation vs. Textual	–5.59	127	0.00
Structural vs. Textual	–3.35	127	0.00

The finding that the textual use of *the* is more difficult than its structural use is not only puzzling but also indirectly contradicts Parish's (1987) findings. In her study, the definite article appeared to be acquired earlier than the indefinite article. The use of the definite article in her data was primarily textual. Several possible reasons may help explain the puzzle and contradiction. First, whereas the data in Parish's study came from narration (subjects telling stories or describing events), our data consisted of participants' limited response to what they were reading and was therefore essentially a judgment of grammaticality. Different tasks have been shown to cause variation in L2 accuracy. As Tarone & Parish (1988) indicated, narration — a communicative language production task — requires a speaker to rely heavily on the accurate textual use of the definite article to communicate clearly and coherently. Grammatical judgment, on the other hand, is not a communicative task and the lack of communicative function may result in lower language accuracy. In that sense, our finding, compared to Parish (1987), would support Tarone & Parish's (1988) conclusions. Another reason for the textual use being more difficult than the structural use may be that, in determining if *the* is needed for textual use, the subject has to remember whether the noun has been mentioned previously; in structural use, the information that necessitates the use of *the* is in a modifier right before or after the noun. Finally, about half of the items in our instrument consisting of a textual use of *the* were of the associative anaphoric type — that is, the noun in question was associated with, rather than the same as, the previously mentioned noun. This lack of direct previous reference might have caused some of the subjects to miss the associated reference, a hypothesis indirectly supported by some results from Poesio & Vieira's (1998) study. The subjects in their two experiments were asked to classify and locate, among other uses of the definite article, direct anaphoric and associative anaphoric uses. In both experiments, the participants performed much worse in the identification of the associative category than in the direct one in terms of agreement in their decisions.

OVERUSE OF *THE*

With regard to the unnecessary uses of *the* that the students provided, we also first conducted a MANOVA. The results in Table 4 show, as in the case of missed obligatory uses of *the*, a significant difference between the three levels of students on all four overuse categories: cultural, general reference (abbreviated "general" hereafter), structural, and ungrammatical.

Table 4: Results of MANOVA of overused *the*s in three categories across three levels

Multivariate					
Use Type	*Wilks' Lambda*	*df*		*F*	*P*
All types	*0.62*	*8*		*8.39*	*0.00*
Univariate					
Use Type	*Sum of Squares*	*df*	*Mean Square*	*F*	*P*
Cultural	565.24	2	282.62	14.41	0.00
General Reference	241.53	2	120.77	11.83	0.00
Structural	93.15	2	46.57	11.60	0.00
Ungrammatical	162.25	2	81.12	11.43	0.00

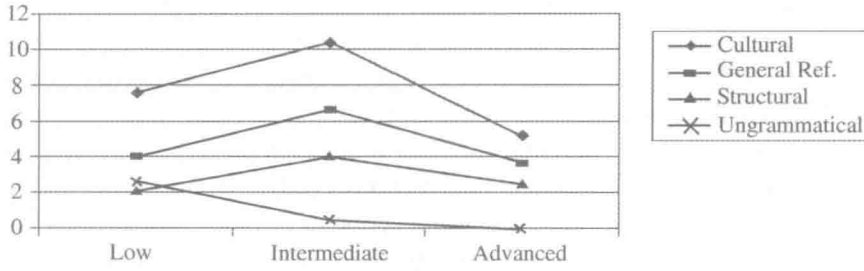
Table 5: Means, standard deviations, and the Tukey's test results of comparison between the group means

	Low (N=41)		Intermediate (N=49)		Advanced (N=38)	
Category	Mean	SD	Mean	SD	Mean	*SD*
Cultural	7.56_a	4.44	10.24_b	5.00	5.13_c	3.53
General Ref.	4.02_a	2.82	6.67_b	3.65	3.68_a	2.93
Structural	2.12_a	1.47	4.04_b	2.28	2.53_a	2.11
Ungrammatical	2.66_a	4.57	0.51_b	1.02	0.00_b	0.00

Note: Means with a common subscript are not significantly different with $p<0.05$.

We then applied a post hoc Tukey test to determine where among the three groups the differences lie. The results are reported in Table 5 in subscript letters together with the groups' means and standard deviations. Figure 2 has also been provided to help illustrate the differences between the three groups. The results show that in the cultural, general, and structural categories, the intermediate students overused *the* more than both the low-level and the advanced students, respectively. In other words, the participants' overuse in these three categories increased as their English proficiency improved from low level to intermediate level, and then such use began to decrease as their English proficiency improved further. In cultural use, the overuse increased significantly from low level to intermediate level

Figure 2: Comparison of means of unnecessary *the* by category



and then decreased significantly as the participants' English proficiency reached an advanced level. More importantly, the advanced group's mean was also significantly lower than that of the low-level group. Overuse of *the* in the general and structural categories also increased and then decreased significantly, but the advanced group's mean, although significantly lower than that of the intermediate group, was not significantly different from that of the low-level group. The results seem to suggest that overuse of *the* still remains a problem for advanced ESL students.

The overuse of *the* in the ungrammatical category presents a very different picture. It decreased continuously, and understandably so, as the participants' English proficiency increased. In fact, very few intermediate subjects and no advanced subjects placed *the* in structurally unacceptable places. With their overall knowledge of grammar increasing, ESL students are expected to make fewer syntactic errors. On the other hand, the increase and then decrease in the overuse in the other three categories seems to support the existing findings regarding the acquisition process of *the* and inflectional morphemes in L2 in general. For example, Huebner (1983) and Master (1987a) both reported a significant increase of the overuse of *the* at the intermediate level. In terms of the acquisition of other morphemes, Lightbown (1983), in a longitudinal study of French-speaking children learning English at school in Quebec, found that the learners overapplied plural *-s* but that this overuse gradually decreased over time. Similarly, Pica's (1983a) study of the effects of different learning contexts on language acquisition showed that instructed learners tended to overuse grammatical morphemes more than naturalistic and mixed learners, although her study did not investigate whether such an over-application would subsequently decrease.

We also wanted to know if the students' native language is a factor

influencing their acquisition of the use of *the*. There were 18 native languages represented, though the majority of the subjects were speakers of Chinese, Korean, and Japanese. Some languages had only a few subjects (fewer than three in a few cases). As a result, counting every language as a variable would have produced statistically unreliable results. We decided instead to divide the students into two mixed language groups: Indo-European (n=27) and all others (n=101). Given that English is an Indo-European language, we wanted to see if speakers of other Indo-European languages would make fewer errors than students from other language groups. To answer our question, we conducted a two-tailed t-test on the two groups' means in each of the underuse and overuse categories. The results in Table 6 show that, although the Indo-European language speakers performed better — that is, they committed fewer omission and overuse errors in all categories — significant differences were found only in underuse of *the* in the cultural and situation use categories. Thus, native language does not seem to be a significant factor, at least not in all the usage types. Yet because the group size of Indo-European language speakers was about one fourth of the other group, the findings may not be reliable.

Table 6: Means, standard deviations and the results of *T*-tests

Indo-European (N=27)			Other (N=101)				
Use Type	*Mean*	*SD*	*Mean*	*SD*	*T*	*df*	*P*
Cultural (U.U.)	4.11	2.59	5.89	3.08	2.75	126	0.01
Situation	1.19	1.47	2.63	3.36	2.18	126	0.03
Structural	2.11	2.87	3.27	2.93	1.83	126	0.07 (n.s.)
Textual	3.41	2.24	3.79	2.45	0.74	126	0.46 (n.s.)
Cultural (O.U.)	7.11	3.14	8.07	5.24	0.91	126	0.37 (n.s.)
General Ref.	4.48	2.83	5.06	3.61	0.77	126	0.44 (n.s.)
Structural	2.78	2.04	3.03	2.20	0.54	126	0.59 (n.s.)
Ungrammatical	0.67	1.86	1.15	3.09	0.77	126	0.44 (n.s.)

SUMMARY, PEDAGOGICAL IMPLICATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

This study has yielded two key findings. First, the four nongeneric uses of the English article *the* present different levels of difficulty for

ESL students and do not appear to be acquired at the same time. Instead, ESL acquisition of the nongeneric use of *the* seems to be use dependent and follows a natural order, given that ESL students appear to acquire situation use first, cultural use last, and structural and textual uses in between. Second, in the process of the acquisition of *the*, ESL students' underuse of obligatory *the* decreases significantly as their English proficiency improves, whereas their unnecessary use of *the* appears to follow a different course. It increases significantly as the ESL students' English proficiency increases from low to intermediate level but then decreases as their English improves from intermediate to advanced level. The results support some previous findings on L2 morpheme acquisition processes. There are also some pedagogical implications of this study. First, because ESL acquisition appears to follow a natural order, we must take this sequence into consideration in both classroom teaching practice and instructional material writing. Although it does not mean we should not teach cultural use or structural use of *the* to beginning ESL students, it certainly makes sense not to focus on these more difficult types of use at this stage. Instead, one should start with situation use. In doing so, we are (a) following the natural sequence of the acquisition of *the* undergone by both native speakers (as suggested by Lyons, 1977) and nonnative speakers, as shown in this study, and (b) conforming to a widely believed language-teaching principle — that is, to begin with things that students can see, touch, and hear. It is a principle that the Natural Approach (Krashen & Terrell, 1983) and the TPR approach (Asher, 1982) follow closely. In teaching the situation use of *the*, the teacher can make full use of the objects readily available in class. In teaching cultural use, especially those in idiomatic expressions, the lexical approach (Nattinger & DeCarrico, 1992) may be very helpful because these expressions are best treated as frozen lexical items. In short, we need classroom teaching practice and instructional material on English articles that reflect the natural acquisition order.

Second, based on our understanding of the four types of use of *the*, we believe that a variety of learning strategies should be employed to make instruction more effective. Situation use, for example, employs the five senses, hence, the use of kinesthetic, auditory, tactile, and visual learning. With structural and textual usage, more cognitive learning may be needed because understanding and practicing these two types of use involve the ability to analyze structural and textual information to identify the known

information that would require the use of *the* with the noun in question. The cultural use of *the* would certainly require both cognitive learning and a significant amount of memorization because, as pointed out earlier, such use, though rule-governed in many ways, is often conventional and the rules are often too many and too complex to be easily grasped.

Third, given that ESL students seem to undergo a process of first underuse, then overuse, and finally appropriate or close to appropriate use in acquiring the various usage types of *the*, ESL teachers should be patient and should not feel frustrated when students still make errors after many hours of instruction. We also need to understand that some students move faster in the process than others, and we cannot expect them to grasp the different uses of the definite article at the same time.

Although we have drawn three pedagogical implications from this study, there are also three limitations. The first is sampling: Because the participants were mostly East Asians, there was insufficient representation of other language groups. The second limitation lies in the categorization of the students' levels. Instead of using a continuous measure of English proficiency, two different measurements were used in the present study. Although TOEFL was the quasi-measure used to separate the low-level students from the two higher level groups (the intermediate and advanced students all had a TOEFL score of 500 or above but the low-level group did not), a cloze test was employed to classify the intermediate and advanced students. The third limitation is the students' language data. This study did not involve students' own spontaneous language production. Therefore, future research calls for studies that (a) have a larger sample size with a more balanced representation of various language groups, (b) use a continuous measure of proficiency in grouping subjects, and (c) involve a greater variety of data. A comparison between subjects whose native languages contain an article system and those whose do not will also be interesting and useful, for it may help us to better appreciate the impact ESL learners' native languages have on their acquisition of English articles.

Notes

1. Although the term "zero article" traditionally refers to any instance in which a noun requires no article, recent research (Chesterman, 1991; Celce-Murcia & Larsen-

Freeman, 1999; Master, 1997a, 1997b) divides the zero article into two types: zero and null. The zero article occurs with nonspecific or generic noncount and plural nouns, such as *water* and *cats*. The null article occurs with certain singular count and proper nouns, such as *Chicago* and *lunch*.

2. We specified the indefinite article here to exclude the zero article. If the zero article is considered a full article, as it has been in some current practice, it is then the most frequently used article, followed in order by *the* and *a(n)*; more importantly, it is "the most frequently occurring free morpheme in the English language" (Master, 1997b, p.221). If, however, the zero article is excluded, the definite article is by far the most frequently used word in the English language, according to many corpus-based studies (Francis & Kucera, 1982; Heeman & Allen, 1995; Johnsson & Hofland, 1989).
3. Master (1987b), however, argued that such generic use of *the* can occur only with singular count nouns. He contended that when plural count nouns are used with *the* in such a fashion, they essentially indicate all of the race or species in question, as seen in the example *All the Germans are athletic*.
4. The problem is further complicated by native speakers' occasional inconsistency in the use of *the*. One cause of such inconsistency is what Rastall (1995) identified as some speakers' tendency to omit *the* in certain contexts considered obligatory historically, such as in some geographical names like *Sudan*, *Ukraine*, and *Wembley Stadium*, or in phrases like *in face of* (all examples from Rastall) where, according to Rastall, *the* is deemed redundant either because the names have begun to be treated as proper nouns or the phrase is considered a fixed expression. Another source of this inconsistency relates to native speakers' pragmatic presupposition regarding whether to indicate a unique entity or to express a general class of entities or conceptual category, as can be seen in *Are you still writing a biography of Nixon?* versus *Are you still writing the biography of Nixon?*
5. As stated at the beginning of the paper, the purpose of our study is narrow and, as a result, the framework of our discussion of the definite article here is also limited. We do not attempt to provide a complete grammatical description of the use of *the* nor an exhaustive treatment of the complexity of its usage.
6. It should be pointed out, though, that not all NPs that have an explanatory modifier need the definite article (e.g., *Children born with heart problems require more parental care*). An NP like the one just cited uses the zero article instead of the definite article because, as Master (1990) explained, such a noun classifies rather than identifies information — that is, it refers to a type of people or object rather than to specific ones, as is the case in *the children who were injured yesterday*.
7. For example, concerning disease names, ailments (e.g., *cold*, *headache*) take *a(n)*; common names for common illness (e.g., *flu*, *plague*) take *the*; formal names for diseases (*polio*, *cancer*) take the null article. Regarding lakes and mountains, singular nouns (*Lake Michigan*) take the null article but plurals ones (*Rocky Mountains*) require *the*. Celestial bodies in our solar system all take the null

article except *the earth*, *the sun*, and *the moon* because, whereas the latter three can be used as common nouns and require *the* to become unique referents, the rest (Mars, Jupiter, Venus, etc.) are all proper nouns.

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APPENDIX I: TEST INSTRUMENT

I. Please tell us:
Your native language _____
Number of years you have studied English _____

II. In some of the following sentences, the definite article "the" is missing. Please read the following sentences carefully and insert the article "the" wherever you believe necessary.

1. Fred bought a car on Monday. On Wednesday, he crashed car.
2. I look after a little girl and a little boy on Saturdays. Little girl is smart but boy isn't.
3. I read a book about New York. Author, however, was from Arizona.
4. Jane bought a ring and a necklace for her mother's birthday. Her mother loved ring but hated necklace.
5. Rocket ships are launched from Cape Canaveral in Florida.
6. We rented a boat last summer at a lake. Unfortunately, boat hit another boat and sank.
7. My mother has a white dog and a black dog. White dog is taller than black one.
8. The mother says to her children, "Come on, it's time to go to Grandma's house."
9. I watched several old movies last weekend. I enjoy watching old movies.
10. I have read a few science fiction books this semester. Science fiction books are really interesting.
11. Congress meets on Capital Hill.
12. At the zoo I saw several tigers. I think that tigers are beautiful animals.
13. While driving in their car to work, the husband asks his wife, "Could you open window please?"
14. Our office got some new computers last week. Someday, I really think that computers will replace people everywhere.
15. Before the examination begins, the teacher says to the students, "Write your answers in blanks."
16. I saw a man in a car across the street. At first I wasn't sure, but then I realized that man driving car was a friend of mine.
17. Handle of that cup was broken.
18. When I grow up, I want to be a doctor. Medicine is a widely respected profession.

19. Austin is capital of Texas.
20. Do you know pilot who flies this airplane?
21. Man I met in New York later became my husband.
22. Blue car across the road is very suspicious.
23. Did you hear house we saw last week was burned down last night?
24. I know man who runs this university.
25. Can you turn on light on top of that table?
26. In his office, the boss says to his secretary, "Turn on computer."
27. Children growing up with both parents are healthier than those growing up with only one parent.
28. Mary is not tall but she plays basketball very well. Usually short women aren't so good at playing basketball.
29. I've heard of parents who don't give their children enough to eat.
30. People from around the world are meeting here today.
31. We went to a basketball game on Saturday. Players at game were all very tall.
32. Shade on this lamp is really ugly.
33. Things of beauty always bring great joy.
34. We went hiking in Lake District last autumn.
35. She is only American woman to have run for vice-president.
36. I generally don't read newspaper articles from low-class papers.
37. Sally Ride was first woman in space.
38. Professor who teaches the physics class explains things very well.
39. A woman, with her hands full, says to a man standing in front of the office, "Open door for me, would you?"
40. Water in this glass is dirty.
41. A man says to his wife at the breakfast table, "Can you pass me newspaper?"
42. While driving in their car to work, the father says to his son, "please turn on radio."
43. Tom and his friend are playing basketball. Tom says loudly to his friends, "Pass me ball."
44. Shoes in department stores tend to be expensive.
45. We went to a wedding. Bride was beautiful and groom was handsome.
46. The manager asks her secretary: "Could you please check schedule for me?"
47. I like to read books about philosophy.
48. Pacific Ocean is the largest in world.
49. Sun is shining. It's a beautiful day.
50. Moon is full tonight.
51. We got a new television for our house. I enjoy watching some programs, but in general I think that we shouldn't watch television so much.
52. Do you think we can move car that's blocking my driveway?
53. At dinner, the mother reminds her children, "Keep your elbows off table."
54. Who is leader of your club?
55. President of the United States lives in White House.
56. My mother likes to have salads at dinner because salads are very healthy.

57. *Ladies of the night* is a euphemism (an indirect word) for prostitutes.
58. Bill caught Malaria (a disease) while traveling in Africa.
59. In a bright sunny room, the woman asks the man: "Could you close curtains, it's too bright in here."
60. I like to watch movies that are black and white.
61. The teacher says to his pupils, "Read Chapter Twenty in your book."
62. There are very poor people who are living in this community.
63. The wife hears a noise, then tells her husband, "Doorbell is ringing. Answer door."
64. Mississippi river runs through Louisiana.
65. There has been a great deal of effort to clean up Chesapeake Bay.
66. A woman says to her friend, "Why don't you come over for dinner tonight?"
67. Jim made a salad to go with dinner. Lettuce and tomatoes are always delicious in salad.
68. Lake Michigan is a large lake in North America.
69. The teacher says to her students, "Don't forget that your papers are due next week."
70. I start back to work on Monday.
71. The man says to his friend, "I'm off on vacation tomorrow."
72. The teacher says to her students, "The meeting will not be held until next week."
73. The man says to his date, "I'll see you at eight o'clock."
74. A lot of people died of plague (a disease) in the 17th century.
75. Mojave Desert is in California.
76. New York Times is a very well known paper.
77. The mother asks the father, "Is baby sleeping?"
78. A plane crashed in Florida Everglades.
79. I'm sick. I've come down with flu.
80. The boss says to his employees, "I'm not happy with your work. Things are really going to have to change around here."
81. At dinner, the guest says to the host, "Could you please pass salt?"
82. England is part of United Kingdom.
83. Jill had Polio (a disabling disease) when she was a little girl.
84. The daughter says to the mother, "I'll come visit you in June."
85. Yellowstone Park is in Wyoming.
86. John's wife died of cancer in 1996.
87. The wife says to her husband, who is hanging a picture in the room, "Picture isn't straight."
88. Salt Lake City is in Utah.
89. The game show host says to the contestant, "What's behind door number one?"
90. Mount Etna in Sicily is still an active volcano.
91. In their living room at bedtime, the mother says to the children, "Turn off television."

APPENDIX II: ADDITIONAL EXAMPLES AND EXPLANATIONS OF OUR CLASSIFICATION OF THE UNEXPECTED USE OF THE

Ungrammatical Uses of *The*

In classifying unexpected uses of *the*, we first separated them from the rest of the un-grammatical ones. For example, in sentence 69 (S69), *the* was found in three unexpected places (though not inserted by the same student): *The teacher says to her the students, Don't forget that your the papers are due the next week*. We considered the first two un-grammatical because the two nouns *students* and *papers* each already had a specific core determiner. We deemed the last one a structurally acceptable *the* but a cultural overuse because, although *the* is not allowed here, the NP *next week* does sometimes take *the* (we will explain its conventional rule in our discussion of examples of cultural overuse below). Thus, in our analysis, the ungrammatical uses of *the* were strictly those that were structurally unacceptable, and they were a tiny minority group compared with the structurally acceptable overuse of *the*. Other examples include: *We rented a boat last summer at the a lake* ... (S6); *I watched several the old movies* ... (S9); *The handle of that the cup was broken* (S17); ... *the house we saw last week was the burned down last night* (S23); and *People from around the world are the meeting here today* (S30).

Cultural, General Reference, and Structural Overuses of *The*

We have included many more examples of cultural overuse than of the other two types because it constituted the largest group of the three categories and also because of the extreme complexity of cultural overuse coupled with the rather straightforwardness of general reference and structural overuse.

Cultural overuse: Some obvious examples are the use of *the* before those disease and geographical names that take the null article instead, such as *the polio* (S83), *the cancer* (S86), *the Arizona* (S4), *the Austin* (S19), and *the Mount Etna* (S90). Some less obvious examples include *the* in *she plays the basketball* (S28) because it is a cultural practice to say *play the piano* but not *play the basketball*, and *the* in *Sally Rider was the first woman in the space* (S37) because, although space here is a unique referent alluding to the region beyond the earth's atmosphere, convention stipulates that it take a null article rather than *the* when so used. For similar reasons, *the* in *on the top of that table* (S25) was deemed a cultural overuse. As mentioned above, we also classified as cultural overuse *the* in *the next week* (S69) because the NP here belongs to familiar use meaning "next week from here and now" and it contrasts with the unfamiliar use of the phrase that means "next week from there and then" as shown in the example *He visited me the next week*. Even though the phrase refers to a specific time in either use, convention dictates that it take a null article in familiar use but *the* in unfamiliar use. One

more example of cultural overuse is *the* in *I'm off on the vacation tomorrow* (S71) because *on vacation* is an idiomatic expression without *the* or *a*, meaning "being away." The phrase may take *a*, as in *go on a* vacation but it means "taking a trip" instead.

General reference overuse: One example is *the* placed before the word *computers* mentioned the second time in *Our office got some new computers last week. Some day, I think that the computers will replace people everywhere* (S14). This use of *the* is a general reference overuse because its head noun is a general conceptual noun rather than a reference to the computers mentioned earlier. Another example is *the* in *The rocket ships are launched from Cape Canaveral in Florida* (S5). Its head noun is not a reference to specific rocket ships and hence no *the* allowed. The same can be said of *the* in *The things are really going to have to change around here* (S80). Again, the word *things* is not a specific but a general referent, and hence the definite article is a general reference overuse (e.g., *the* in *I like to read books about the philosophy* [S47]).

Structural overuse: One example is *the* used before *people* in *The people from around the world are meeting here today* (S30). Although the noun *people* is indeed modified in structure by a prepositional phrase, the modifier does not make the noun a specific referent, so the definite article is a structural overuse — that is, an NP that has a modifier but does not take *the*. The same is true of *the* placed before *parents* in *I have heard of the parents who don't give their children enough to eat* (S29). Again, the noun *parents* also has a modifier (a relative clause) but the modifier does not work to turn the noun into a referent that identifies specific individuals, hence no *the* is allowed. For the same reason, *the* inserted before *ladies* in *The ladies of the night is a euphemism for prostitutes* (S57) should be a structural overuse because the noun *ladies* also has a post-nominal modifier. This example, however, was one of a few cases in our data where one could also classify it as another type of overuse — a cultural overuse in this case, given that *ladies of the night* (plural of *lady of the night*) is a fixed idiomatic expression, whereas *a lady of the night* or *the ladies of the night* are not. We decided to include it in structural overuse because the item was written as a distracter of structural use (i.e., a noun with a modifier but one not allowed to take *the*).

Chapter 3

Intransitive or Object Deleting? Classifying English Verbs Used without an Object and Its Pedagogical/Research Implications

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INTRODUCTION

In English, there are many verbs that are transitive by nature but are sometimes used without an object, such as *deliver*, *eat*, *know*, *paint*, *promise*, and *read*. These verbs are not monolithic because they differ in many ways, including the contexts in which they can be used without an object and the extent to which such use may bring a shift in meaning in the utterance.[1] Yet despite their differences, when so used they are often all referred to as "intransitive" verbs in grammar reference and teaching materials and, in cases where they are classified differently, there is significant inconsistency. This inaccuracy and inconsistency, in turn, create confusion and difficulty for English language teachers and learners, who often rely heavily on textbooks and reference books for information. A more accurate and systematic classification of these verbs is thus needed because, as I will argue later in the paper, it can help material writers provide a better description of the verbs, which, in turn, will benefit language teachers and learners. It is the purpose of this paper to 1) argue and show how using syntactic, semantic, and pragmatic theories together can more accurately and systematically classify these verbs; 2) present a classification framework using an approach that combines syntactic, semantic, and pragmatic analyses; and 3) discuss how the theoretically grounded framework may provide writers of grammar reference books and textbooks with a more accurate and useful guide in describing these verbs, and how it may, in turn, help English language learners deal more effectively with the challenges in grasping these verbs, especially in understanding when and where object deletion is permitted in English.

Before I begin, a brief discussion of my approach in this paper is in order. As mentioned above, a major purpose of the paper is to show how using syntactic, semantic, and pragmatic analysis together can help to develop a more accurate description of the English verbs in question. Linguistic research in the past decade has demonstrated the extreme importance of pragmatics in understanding the use patterns and classification of verbs (Goldberg, 2004, 2005; Harley & Noyer, 2000; Siddiqi, 2006). Thus to accurately understand and describe a verb's usage pattern calls for close examinations of the syntactic, semantic, and pragmatic factors around its use in real examples. For such examinations, corpus data are extremely helpful, if not necessary, since examples in a corpus include the needed pragmatic, semantic, and syntactic information. Specifically, for example, the contextual information (discourse or situational) that corpus data contain allows us to determine whether there is a specific object deleted in a given verb case. Without such contextual information, we are left helpless in making a determination on this issue. For example, without any contextual information preceding or following the sentence *Mary read for a while before she went to bed*, it is impossible to decide whether a specific object, like a book or a magazine, has been deleted after the verb *read*. Making this distinction is important because whether a specific object has been deleted determines whether the verb is used as an intransitive verb focusing on activity or as an instance of object deletion, a distinction that, as I will argue later in this paper, should and can be made. Corpus data often include the needed information for making such a determination. Furthermore, corpus searches allow us to obtain fairly accurately and reliably the frequency and register distribution of a verb's transitive use vs. its intransitive use. Such information is crucial in the description of verb usage patterns. Thus in this paper, whenever appropriate and necessary, I use data from the British National Corpus (BNC) to make and support my argument, examining authentic examples in all their complexity and considering all the relevant contextual and pragmatic factors. In the process, I am able to work through the connections between syntax, semantics, and pragmatics with the verbs in question and accurately determine their usage patterns or classifications. In short, my discussion in this paper is largely corpus based. Though not a corpus-driven approach in the sense that the argument is not drawn inductively from corpus searches, this corpus-based approach still requires the argument to account fully for and be responsive to real examples of

language in use.

Existing Treatment of English Verbs Used Without an Object: Background and Context

In order to understand the need for a more accurate and consistent classification of these English verbs, it is useful to take a close look at existing treatments of the issue. Scrutiny of 19 major grammar books (both reference books and student textbooks) and eight dictionaries[2] indicates that 1) all the student grammar textbooks classify these verbs simply as "intransitive" (i.e., none of the books examined here offers a discussion of object deletion in English); 2) the same is true of most of the reference grammar books and dictionaries examined here (e.g., Baker, 1995; Carter & McCarthy, 2006; Parratt, 2000); and 3) those few reference books that cover the issue of object deletion (e.g., Biber, et al., 1999; Dixon, 2005; Huddleston & Pullum, 2002, Quirk, et al., 1985; *OED*, 1989) do not seem, as a whole, to have provided a comprehensive and systematic treatment of these verbs, thus resulting in some intra-book and inter-book inconsistencies and confusion as well as inaccuracies. Before I elaborate on this issue, it is extremely important to note that my discussion here is not meant as a criticism of any of these excellent reference books, but only as a point of departure for the exploration of an issue that I argue has not received due attention. In fact, these reference books, especially the aforementioned influential works of Biber, et al., Dixon, Huddleston & Pullum, and Quirk, et al. have offered some very valuable discussions of the verbs in question. Their work provides very valuable information for the development of my framework for classifying these verbs, as proposed below.

The current treatment of English verbs used without an object raises three fundamental issues. First, grammarians differ, to a great extent, in their approaches to and classifications of these verbs. Although, as mentioned above, most of them view all these verbs as intransitive, some (Biber, et al., 1999; Downing & Locke, 2002; Huddleston & Pullum, 2002; Kaplan, 1995; Quirk, et al., 1985; Wardhaugh, 2003), while also considering them intransitive, make an effort to distinguish these verbs from other intransitive verbs by labeling them either as intransitive verbs through conversion, i.e., converted from transitive via object omission (Quirk, et al., 1985; Wardhaugh, 2003) or as object-deleting/object-omission verbs (Biber, et al., 1999, p.147; Dixon, 2005, p.133; Huddleston & Pullum,

2002, p.301; Kaplan, 1995, p.177).

Second, most of the reference books that touch on the topic of object deletion (e.g., Downing & Locke, 2002; Kaplan, 1995; Wardhaugh, 2003) mention in their discussion only verbs like *eat*, *drink*, and *read*, which are just one type of English transitive verb that may function without an object. A few (Biber, et al., 1999, p.147; Dixon, 2005, pp.133–138; Huddleston & Pullum, 2002, p.301; Quirk, et al., 1985, p.723) include, in addition, some other types of verbs such as *deliver*, *wash*, and *dry* in *We deliver* and *You wash and I dry*, and those used in instructional language, such as *Don't touch* and *Apply liberally*. More importantly, except Dixon (2005), none of them include *explain*, *know*, *see*, and *understand*, one group of verbs that often drop their objects when they are understood from the discourse context. The following example from the BNC illustrates the point (italics have been added unless otherwise noted):

(1) [Police officer] "Naturally, if there are legal proceeds, you may be required to testify as a witness here, or even in a court of law."
[Crime victim] "I *understand*."

It is clear from the discourse context that what the crime victim understands is the fact that she may need to testify as a witness. Object deletion of this type is fairly common with these verbs in conversation. A search of the spoken register (ten million words) of the BNC finds approximately 380 such uses of *know* per million words, 110 per million in the case of *see*, and 6 per million in the case of *understand*. The low frequency in the case of *understand* is likely due to the fact that the word is rather formal in this context, much more so than the other two words, and is therefore not used very frequently in conversation.

The third and more puzzling point about the existing reference books' treatment of the verbs is that, while most do not discuss the *explain*, *know*, and *see* type of verbs as examples of object deletion, a few (e.g., Biber, et al., 1999, pp.386, 389) list them simply as intransitive verbs. For example, in a section on the intransitive, mono-transitive, and complex transitive use patterns of *see*, *promise*, and *tell*, Biber, et al. report the following:

> Intransitive SV is found primarily in conversation and fiction:
>
> *I* **see**. (CONV)
> *He couldn't* ***see*** *clearly* (FICT) [Italics and bold in original] (Biber, et al., 1999, p.386).

> Finally both verbs (*promise* and *tell*) occur with intransitive patterns (SV):
>
> *Yes, I* ***promise!*** (FICT)
> *She said only time will* ***tell*** (NEWS) (Biber, et al., 1999, p.389).

There are two issues with the above descriptions. First, semantically as well as syntactically, the verb *see* in "I see" actually does not function the same way as it does in "He couldn't see clearly." In the former, it most likely means "understand," i.e., the speaker understands what his/her interlocutor has just said. Here the missing object of *see/understand* is what the speaker's interlocutor has just said, and it has been deleted because it is understood from the discourse context, a point that will be discussed in more detail later. In contrast, the meaning of *see* in "He couldn't see clearly" is "to have the faculty of sight/vision," i.e., it means the person "he" did not have clear vision. *See* here does not have a clear, specific deleted object. It is used intransitively. This conclusion is supported by the fact that some dictionaries (e.g., *OED*, 1989, p.865) list this latter use of *see* as intransitive but not the use of *see* in "I see," which is considered object deleting or "absolute structure" in the *OED*'s terminology (p.866). Concerning the two verbs *promise* and *tell* in the second pair of sentences in Biber, et al.'s discussion, they function like the *see* in "I see," in which the object has been deleted but is recoverable from the discourse context. In other words, they are used as object-deleting verbs. The utterance "Yes, I promise!" is most likely a response that the speaker is making to his/her interlocutor's request. What the speaker is promising, which is omitted, is to do what he/she was asked to do. In the statement "She said only time will tell," the person "she" must have made the "only time will tell" comment as a response to her interlocutor's question about whether something would happen, was true, etc. This *wh*-clause is the deleted object of *tell*.

The second issue here is that while Biber, et al. (1999) treat the above uses of *see*, *promise*, *tell*, and the verbs like them as "intransitive," rather than instances of object deletion, they, like all those who address the issue of object deletion, consider verbs like *read*, *eat*, and *drink* used without an object as object deleting, for they write in their discussion of object deletion: "Object-deleting verbs include: *drive*, *drink*, *eat*, *read*" (p.147). Such a classification is problematic because we actually have more compelling reasons to classify the former type of verbs (i.e., *know* and *promise*) as object-deleting than the latter type. First, there is no meaning shift in the former type of verbs when used without an object, but there is

usually such a semantic shift in the latter type, as shown in the following simple created examples:

Object-deleting verbs

(2a) John is sick. (2a') John is sick.
(2b) I *know* it. → (2b') I *know*.
(3a) I'm busy so I cannot help you now. (3a') I'm busy so I cannot help you now.
(3b) I *understand* it. → (3b') I *understand*.

Questionable object-deleting verbs

(4a) John *ate* a burger. → (4b) John *ate*.
(5a) Mary is *reading* the morning paper. → (5b) Mary is *reading*.

As some linguists (e.g., García-Velasco & Muñoz, 2002; Quirk, et al., 1985) have correctly pointed out, in the case of the second type, the shift of the verbs' function from transitive to intransitive often involves a change in the focus of meaning, i.e., the focus turns from the object in the transitive use to the activity (the verb) itself in the intransitive use. There is no such semantic shift in the object-deleting verbs' shift from transitive to intransitive.

The second compelling reason is that, according to some linguists (Fillmore, 1986; García-Velasco & Muñoz, 2002; Groefsema, 1995), the supposedly deleted objects of the questionable object-deleting verbs are, in most cases, "indefinite objects," i.e., there is no specific direct object in reference. For example, in the utterance "John already ate," there is the possibility that even the speaker does not know what John ate. What the speaker knows and wants to convey is the fact that John did take in some food. In fact, García-Velasco & Muñoz (2002, p.9) conducted a search of the BNC regarding all such intransitive uses of *bake* and *eat*, and their findings confirm that overall "when used intransitively these verbs clearly take an activity reading focusing on the activity itself rather than on its product." In contrast, the deleted objects of true object-deleting verbs are specific or "definite objects," to use García-Velasco & Muñoz's term. For instance, in the above "I know" utterance, what the speaker knows is the fact that John is sick.

The third compelling reason is that, while the object-deleting verbs cannot be used without a discourse context even when they are accompanied by an adverbial of place or time, the questionable object-deleting verbs can be so used, as can be seen in the following examples:

Object deleting

(6) *He *knows* everyday.
(Listeners need to know "what he knows" for the utterance to be meaningful.)

(7) *I *understood* last night.
(Listeners need to know "what I understood.")

Questionable object deleting

(8) He *reads* everyday.

(9) I *ate* last night.

Based on the above analysis, the former group (*know*, *see*, and *understand*) is clearly a much more prototypical type of object-deleting verbs than the latter group. It is, therefore, perplexing that the more prototypical type of object-deleting verbs is left out while the less prototypical is mentioned in the discussion of object deletion in almost all the English grammar books.

As far as dictionaries are concerned (including learner dictionaries), almost all of them list the various types of verbs that may be considered object deleting simply as "intransitive." The *Oxford English Dictionary (OED)* appears to be one of the few exceptions. It lists *see* as "absol[ute]" (vol.14, p.866), and *know* as "absol[ute] or intr[ansitive]" (vol.8, p.513). The term *absolute* means "object deletion" in connection with verb usage. The *OED*'s inclusion of object deleting in its verb classification is surely commendable. Yet its classification also appears to be inconsistent. Besides labeling *see* and *know* differently, with *see* as only "absolute" but *know* either as "absolute" or "intransitive," it lists *understand* only as "intr[ansitive]" (vol.18, p.985). There are two problems here. First, *see* can be used both as intransitive (*can/cannot see clearly*) and object deleting (*I see*). Second, *understand* may also be used as an object-deleting verb, like *see* and *know*.

A problem found in the learner dictionaries worth mentioning is that some of the examples they use to illustrate what they list as intransitive uses of the verbs in question actually highlight the fact that these verbs are really used as object-deleting verbs. For instance, in explaining *know* as an intransitive verb, *Cambridge Advanced Learner's Dictionary* and *Macmillan English Dictionary for Advanced Learners* use the following examples:

(10) "Where did he go?" "I don't *know*." (*Cambridge*, 2005, p.704).

(11) "Have they arrived?" "I don't *know*." (*Macmillan*, 2002, p.790).

Obviously, without the first sentence in each pair providing the discourse

context, the second sentence with the verb *know* would not be meaningful. In this sense, the verb *know* in the examples is clearly used as object deleting.

In summary, the above discussion demonstrates a noticeable confusion in the current treatment of English transitive verbs used without an object as it lacks not only consistency and clarity, but also accuracy. A more consistent and accurate classification of these verbs is thus needed. Such a classification requires a close examination of these verbs that takes into account all the factors that govern their use, including syntactic, semantic, and pragmatic variables. In fact, any valid and reliable linguistic or grammatical description must consider syntactic, semantic, and pragmatic factors. A brief review of current syntactic, semantic, and pragmatic theories regarding transitivity and intransitivity is thus in order before the presentation of my proposed classification framework.

Syntactic, Semantic, and Pragmatic Theories Regarding Transitivity/Intransitivity

In the past few decades, a line of research in syntactic theory, known as "argument structure" and "theta theory," has led to some new understandings about verb transitivity and intransitivity (Alsina, 1996; Chomsky, 1981, 1993, 1995; Grimshaw, 1990; Radford, 1997). Developed from work in logic, argument structure focuses on the relationship between the verb ("predicate") and its related noun phrases ("arguments"). In this system, verbs are classified based on the number and the nature of the arguments that they require. For example, a verb that requires only one argument (e.g., *fall* in *He fell*) is called a one-argument or "one-place predicate," a verb that calls for two arguments (*kick* in *He kicked the ball*) is a "two-place predicate," and a verb used with three arguments (*get* in *John got Mary a present*) is a "three-place predicate" (Radford, 1997, pp.325–326). Another important issue in the argument structure analysis is the thematic or theta (θ) role of the argument(s) involved (i.e., theta theory). In this aspect, argument structure, as some scholars (Van Valin, 2005; Wechsler, 1995) have shown, is grounded, to a great extent, in semantics. In other words, argument structure with its theta theory is a combined syntactic-semantic approach to language.

According to theta theory, the arguments in a verb phrase each play a different thematic or theta (θ) role in relation to the verb, such as "agent," "theme" (also called "patient"), and "instrument." This is because, based

on the "theta criterion" (a crucial part of theta theory), "each argument of the verb receives one and only one theta role and each theta role is assigned to one and only one argument" (Brown, 1991, p.494). In the example of *Tom opened the door with a knife*, *Tom* is the agent (the performer of the action of opening), *the door* is the theme (the entity undergoing the effect of opening), and *the knife* is the instrument (the means by which the action opening is carried out). The theta role of an argument in a sentence does not change even when its syntactic position or role changes. Take for instance the argument *the door* in both *Tom opened the door* and *The door opened*. Although the syntactic role of *the door* differs in the two utterances (as object in the former and subject in the latter), its theta role does not, for it plays the theme role in both sentences. By the same token, two arguments with the same syntactic role may have different theta roles. For example, both *Tom* in *Tom opened the door* and *the door* in *The door opened* play the syntactic role of subject in their respective sentences but their theta-roles are different with the former being agent and the latter theme.

Such a syntactic-semantic analysis of verb structures provides us with a new perspective in understanding intransitivity. In traditional grammar, all verbs used with only one argument (i.e., a subject) are in general classified simply as intransitive because they do not contain an object. Yet from the perspective of theta theory, we are able to see that these verbs are not monolithic despite their apparent similarity in syntactic structure. As Rutherford (1998, p.191) correctly points out, "Verbs exhibiting surface characteristics of intransitivity, however, are a mixed bag and can be distinguished syntactically and/or semantically." Rutherford lists the following examples to illustrate his point:

(a) John *laughed/slept/talked/*etc.
(b) John *awakened/aged/changed/*etc.
(c) John *teases/bribes/angers* easily.
(cf. You can *tease/bribe/anger* John easily.)
(d) John *read/wrote/drove/*etc.
(cf. *read a book/wrote a letter/drove a car*) (Rutherford, 1998, p.191)

In his analysis, the theta roles of the above types of verb uses are respectively agent in (a), theme in (b), theme in (c), and agent in (d). Rutherford further classifies the four types of "intransitive" verbs as follows: those in (a) are "unergative," those in (b) "ergative," those in (c) "middle," and those in (d)

"pseudo-transitive" (p.191).

Rutherford's discussion clearly shows how syntactic-semantic theories like argument structure can help us to better understand verbs used without an object. However, as is implied in Rutherford's warning for his readers not to treat his classification system as "infallible heuristics" (p.192), applying the argument structure type of analysis to the classification of intransitive uses of verbs is not without challenges. In fact, there are indeed two issues in Rutherford's classification. First, his differentiation between ergative and middle voice is debatable because some grammarians question the criteria used for the distinction, a point that will be addressed in detail below in the discussion of the ergative verbs in my classification framework. Second and more importantly, like many of the other grammarians discussed in the previous section, Rutherford has completely left out of his discussion what I consider object-deleting verbs like *explain*, *know*, *notice*, and *see*. The identification of these true object-deleting verbs, as I showed in the previous section, relies heavily on discourse context and pragmatics. Argument structure analyses are inadequate in dealing with these verbs. In other words, syntactic theories alone are incapable of providing a full account of the English verbs used without an object. To develop a clearer and fuller classification of these verbs, discourse and pragmatic analyses are also called for.

In fact, recent research has shown an interface between argument structure and pragmatics in the study of the practice of object deletion (Goldberg, 2004, 2005; Harley & Noyer, 2000; Siddiqi, 2006). At one level, pragmatics deals largely with how context (both discoursal and situational) influences language use and meaning. From the perspective of pragmatics, a major issue regarding the use of arguments is whether an argument is discourse old (given) or discourse new (Prince, 1992). If an argument is discourse new, it must be stated. However, when an argument is discourse old (be it a subject or object), it may be omitted, i.e., it may not be explicitly mentioned, because it is understood (identified) from the discourse context. Of course, languages vary in the extent they allow such argument omissions. For example, in languages like Chinese and Hindi, many arguments, including all topical arguments, can be deleted (Huang, 1984; Goldberg, 2004, 2005), but in English, such omissions are much more limited. Pragmatics also concerns how our conceptual and real world knowledge, known as the "Encyclopedia" in linguistics (Harley & Noyer, 2000; Siddiqi, 2006),

helps determine whether the use of a language structure including verbs is grammatically and semantically acceptable. According to Harley & Noyer (2000) and Siddiqi (2006), whether the use of a verb is acceptable does not depend just on its syntactic normality but also on its pragmatic normality determined by the Encyclopedia or our conceptual and real world knowledge (for a more detailed discussion on its function, see Siddiqi, 2006, p.40). For example, as Harley & Noyer (2000) argue, the utterance "Chris thought the book to Martha" is in fact structurally possible (i.e., a structurally coerced reading is possible where Chris engages "in teleportation or telepathic dictation and Martha is the recipient of a book, as information or as object" [p.353]) but it is "pragmatically anomalous" as the Encyclopedia tells us it is impossible for a human being to engage in such teleportation via thinking.

Thus, using syntactic, semantic, and pragmatic theories together in a unified approach can lead us to a much better understanding of English verbs used without an object. Such an approach guides my classification framework introduced below.

A FRAMEWORK FOR CLASSIFYING ENGLISH VERBS USED WITHOUT AN OBJECT

As mentioned above, many grammar reference books and dictionaries simply classify all English verbs used without an object as "intransitive verbs." Such a classification is based on a commonly accepted broad definition of "intransitive verbs" like the one we find in Trask (1993): an intransitive verb is one that "intrinsically or in a particular instance, occurs without a direct object" (p.145). Such a broad definition may certainly be very appealing because it makes the categorization of English null-object verbs simple, but it ignores the significant semantic and syntactic differences among the different types of verbs grouped under the label, and especially the difference between true object-deleting verbs and the rest. The following proposed framework aims to address the problem by recognizing the differences.

In this proposed framework, English verbs used without an object fall primarily into four categories based on their differences in syntax, semantics, and/or pragmatics: 1) pure intransitive, 2) ergative intransitive, 3) transitive-converted intransitive, and 4) object deleting with two sub-categories of deletion — one warranted by discourse context and one by

situational context. The four categories are placed in order of their degree of intransitivity with category 1 being the most prototypical intransitive and category 4 being the least intransitive-like but the most prototypically object deleting in nature.

Category 1: Pure Intransitive

These verbs are inherently intransitive and large in number, including *arrive*, *come*, *cry*, *jump*, *lie*, *sit*, *sleep*, and *wait*. They occur with a single argument in the subject position that typically plays the theta role of agent. They never occur with an argument in the object position, i.e., they never take an object, except for a few of them in very limited situations. For example, a few such verbs may take a cognate object, i.e., a noun of the same semantic origin, (e.g., *dreamed a bad dream*, *laugh a good laugh*, *live a good life*, and *sing a song*). A few others may be turned into a causative transitive verb such as *walk one's dog* and *sit someone down*.

Category 2: Ergative Intransitive

In contrast with pure intransitives, ergative intransitive verbs are those that occur with a single argument in the subject position that typically plays the theta role of theme. Furthermore, these verbs are also often used transitively and when used transitively, the subject of such a verb in its intransitive or ergative use will play the syntactic role of object (i.e., it will change from being the subject to being the object) as illustrated in the following BNC examples:

(12a) *The window* broke ...
(12b) ... they broke *the window.*
(13a) ... *the rules* changed about a year ago.
(13b) Then they changed *the rules.*

Fairly substantial in number, ergative intransitive verbs include *break*, *close*, *continue*, *decrease*, *increase*, *melt*, *open*, *stop*, and *turn*. Unlike pure intransitive verbs, whose intransitive nature or origin is self-evident, many ergative verbs are rather opaque when it comes to the issue of whether they are originally intransitive or transitive. Take the verb *increase* as an example. Even the *Oxford Dictionary of English Etymology* (1966) simply lists its meaning as "become or make greater" (p.469) without indicating which of the two meanings (transitive or intransitive) was used first.

There is a small group of ergative verbs that some grammarians believe should be distinguished as "pseudo intransitive" (Biber, et al., 1999,

p.148; Downing & Locke, 2002, p.75) or "middle intransitive" (Huddleston & Pullum, 2002, p.307; Rutherford, 1998, p.191). This sub-group includes verbs like *clean*, *drive*, *read*, *scare*, and *sell* as shown in the following BNC examples:

(14) Books, records and films continue to *sell well*.
(15) It [a poem] did not *sell*. It made almost no impact whatsoever.
(16) Cleveland fire service has taken delivery of two all-terrain Pinzgauers vehicles which can ... *drive smoothly* over the roughest of ground ...
(17) His concepts *read* like a fairytale today.
(18) Jay sensed in her (a girl) a wild creature that *scares easily*.

According to the grammarians who distinguish this group of verbs, these ergative uses differ from the others in two aspects. First, they usually require "an adverbial, very often *easily* or *well*, or the negator *not*" (Biber, et al., 1999, p.148; see also Huddleston & Pullum, 2002, p.308). Second, these verbs are often used to express modality rather than the state or the change of state of the subject, a meaning that the ergative verbs usually set out to convey (i.e., *The door opened* and *The window broke*). Of course, these distinctions may be questioned under a close examination because almost all the ergative verbs can take an adverbial and can express modality, e.g., *Glass breaks easily*, *The window won't open*, and *One's personality can change*.[3] That is perhaps why some grammarians do not differentiate these ergative intransitive verbs from the rest and use the terms *ergative* and *middle* interchangeably to refer to all English ergative intransitive verbs (Celce-Murcia & Larsen-Freeman, 1999, pp.350–351).

Category 3: Transitive-Converted Intransitive Verbs of Activity

Very large in number, this group of verbs includes *eat*, *drink*, *hunt*, *knit*, *play*, *read*, and *sing*. This is also the group that is included as object-deleting verbs by all the grammar books that address the issue of object deletion, a classification I am questioning here. Before I discuss my disagreement on the issue, however, a brief explanation of the differences between these verbs and the ergative intransitive type just discussed is in order, given the fact that some grammarians do not distinguish the two groups. For instance, Quirk, et al. (1985, p.1565) list both the ergative and the transitive-converted intransitive verbs as instances of "transitive→intransitive." There are three significant differences between

the two groups of verbs. First, the subject or the sole argument of an ergative verb plays the theta role of theme but the sole argument of a transitive-converted intransitive verb plays the theta role of agent (e.g., *The window broke* vs. *Mary ate*). Second, while there is a subject change in the use of an ergative intransitive verb compared to its transitive counterpart (e.g., from *They opened the door* to *The door opened*), no such a change is involved in the use of a transitive-turned intransitive verb. The only change in structure in the latter is the deletion of the object as shown in these created examples:

(19a) *Mary* ate a burger.
(19b) *Mary* ate.
(20a) *Tom* is writing a book.
(20b) *Tom* is writing.
(21a) *Jean* teaches English.
(21b) *Jean* teaches.

The third difference between the two groups is that there is no object deletion involved at all in ergative intransitive verbs when they shift from transitive to intransitive because the shift entails only a movement of the object into the subject position, i.e., the object is not deleted, just moved to a different position in the sentence. In contrast, there does appear to be object deletion when we compare the use of a transitive-converted intransitive verb with the use of the verb as a transitive: *John reads newspapers every day* vs. *John reads everyday*. When we juxtapose the two sentences this way, an object seems indeed to have been deleted, at least on the surface. That is perhaps the main reason many scholars have considered these verbs object deleting.

Yet, as I argued in the previous section, there are three compelling reasons not to include, in most cases, such uses of these verbs in the object-deleting category. First, there is often a shift in meaning from the object to activity (the verb) when this particular group of verbs converts from transitive to intransitive. Second, the supposedly deleted objects of these verbs are mostly "indefinite objects," i.e., there is really no specific object deleted. Of course, some scholars argue that there are a few instances in which a transitive-converted intransitive verb of activity may assume "a more specific meaning, so a particular kind of object is 'understood'" (Quirk, et al., 1985, p.1169). An example given by Quirk, et al. is *John drinks heavily*. They suggest that the verb *drink* in the utterance means "drink alcohol," i.e., *alcohol* is the omitted object. While it is true that *drink* here means "drink alcohol," the focus of the utterance, in the final analysis, is not on the object because it does not really refer to any specific

kind or amount of alcoholic drink, something that is usually mentioned if the focus is on the object. In short, transitive-turned intransitive verbs of activity focus on the activity, not the object.[4]

Corpus findings have actually shown that when these verbs convert from transitive to intransitive, there is generally indeed a shift in meaning from the object to the activity, and there is no specific object being deleted. As mentioned earlier, García-Velasco & Muñoz's (2002) study of the verbs *bake* and *eat* in the BNC shows that overall the tokens of the two verbs used without an object "clearly take an activity reading focusing on the activity itself than on its product" (9), and they seem to have no referent object recoverable from their discourse context.

To ascertain whether the same is true of the other transitive-turned intransitive verbs of activity, I, with the help of two graduate assistants, searched the null-object uses of *drink* and *read* (two of the most frequently cited verbs in this category) in the BNC. The results are similar. Most of the tokens were uses focusing on activity with no clear recoverable object (see examples [22] and [23]), although I did find some instances where it appears that a specific object has been deleted (examples [24] and [25]).

(22) There were days and nights when the lovers did not see each other, and when they did they often fought, verbal arguments at first which turned into brawls as they *drank*. They were both dreamers, rudely awoken by the reality of the other.

(23) We arrived at 9.30, went through the usual contortions to buy a ticket, and were told to expect a train at 10.30. We sat down to *read*. Ruth constantly complained about the fidgeting child next to her.

(24) He cursed, took a flask from his pocket and *drank*.

(25) She gave me the book, and went out. I began to *read*. I think I read for two hours, but it seemed like ten minutes.

In Example (22), *drink*, as in many of the tokens of this use of the verb, most likely refers to the drinking of alcohol but, as I argued previously, the focus is on the activity rather than on what is being drunk because no specific type, brand, or amount of alcohol is mentioned. In (23), *read* is clearly used as an activity verb because no referent of what was being read can be found. It is important to note that many of the tokens of such intransitive uses of the two verbs in the BNC are in statements about whether a person does/can or does not/cannot drink or read, where the focus is clearly on the activity (e.g., from the BNC: *Noriega does not drink*; *It is my opinion that he cannot read.*). Obviously, however, such is not the

case in examples (24) and (25). In (24), what the person drank is almost certainly the liquor in the flask; in (25), what the person read is fairly clearly the book she was given. Yet the number of such instances is very small compared to the frequency with which the two verbs are used to express a meaning focusing on activity, instead of the object. Out of the approximately 397 tokens of *drink* as a verb with no object, only 67 (16.88 percent) appear to possess a specific deleted object. Of the approximately 325 tokens of the verb *read* with no object, only 43 (13.23 percent) have a definite recoverable object. Of course, although the percentage of this type of use of these verbs is small, it should be acknowledged and described. In other words, grammar description should make it clear that when these verbs are used without an object, they are mostly instances of "transitive-converted intransitive" although occasionally they can be "object deleting."

The third compelling reason to consider these verbs intransitive verbs of activity is that they can function meaningfully without a clear discourse or situational context as shown in the following BNC examples:

(26) She likes to *read*.
(27) The python has already *eaten*.
(28) She might have been *drinking*.

In contrast, true object-deleting verbs, such as *know*, *promise*, and *understand*, cannot be used this way. They cannot function meaningfully without a discourse or situational context that allows the recovery of the deleted object. An important reason that the transitive-turned intransitive verbs focusing on activity can be used in such a way while object-deleting verbs cannot is that the possible objects of the former type of verbs are very transparent in the Encyclopedia but those of the latter are not. For example, whenever we say someone is *reading*, it must mean the reading of something readable among a very few choices, such as a book, a newspaper, or a magazine; by contrast, there is no such transparent information in the Encyclopedia about what a person can know. There are simply too many different types of information that a person can know. The transparent meaning of the transitive-converted intransitive verbs makes the activity reading of these verbs possible.

In short, the key distinction between transitive-converted intransitive and object deleting is that there is no specific object deleted in the former, but there is one in the latter, and the distinction can be made clear through discourse and pragmatic analysis.

Category 4: Object-Deleting Verbs

The number of verbs in this group is not very large, and the contexts in which they can be used are also fairly limited. That is perhaps one of the reasons that English has been classified as a non pro-drop language, i.e., a language that does not allow subject/object deletion even when the latter is recoverable from its discourse context. Of course, such a classification is not really precise because, as is shown in this paper and elsewhere (Goldberg, 2004, 2005), English does allow some object (and also subject) deletions. Basically, there are two types of context in which some English verbs can drop their object: 1) discourse context, and 2) situational context. Object-deleting verbs warranted by discourse context include, among others, *ask*, *deliver*, *explain*, *find out*, *forget*, *know*, *promise*, *remember*, *recall*, *see*, *show*, and *understand*. They are used mostly in face-to-face interactions or in reported or indirect speech about such interactions, as shown in the following BNC examples:

(29) "Constable Perkins is here," Mrs. Clancy said.
"Yes, I *know*," Mrs. Feather said.

(30) [Speaker A] "Temporary beds will be made up here tonight ..."
[Speaker B] "I *understand*. Thank you."

(31) "Each time we met she invited me, and each time I *declined*."

If it is not in face-to-face interactions or reported speech, the discourse context provided must make the deleted object easily identifiable. Let us look at the following two examples:

(32) The gun lay on the covers, where she had put it down while they were talking. Tug had not even *noticed* (BNC).

(33) This facility receives "green" Falcon 10 and 20 aircraft direct from France, and installs interiors and avionics, and also **paints** and **delivers** direct to the corporate customer (Biber, et al., 1999, p.147, bold in original).

It is clear from the discourse context that the deleted object of *notice* in (32) is either the gun or the clause "she had put it [the gun] down" and the deleted object of *paints* and *delivers*[5] in (33) is Falcon aircraft. It is important to point out that, in terms of their phrase structural patterns and the types of object deleted, the discourse context-warranted object-deleting verbs fall into several subcategories. One is composed of those whose deleted objects are typically a *that/wh*-clause that has just been stated, or the pronoun *it/*

that which stands for the clause, e.g., in Example (29), the deleted object of *know* is the nominal clause *Constable Perkins is here* or its pronoun *it*; in (30), the deleted object of *understand* is *Temporary beds will be made up ...* or its pronoun *it*. Verbs in this category include *know*, *realize*, *see*, and *understand*. A reason that this group (*know*, *see*, etc.) is usually followed by a deleted nominal clause is that these verbs are epistemic in nature, expressing a speaker's awareness of a fact, claim, or phenomenon, which is often expressed in a statement (a clause).

Another subcategory involves those verbs whose deleted objects are typically nouns, e.g., the invitation in Example (31) and the Falcon aircraft in (33); verbs in this group consists of, among others, *accept*, *decline*, *deliver*, and *paint*. The reason for the group being followed mostly by a noun is that these verbs are action or performance-oriented. One more group consists of those whose deleted object can be a noun, a that-clause, or a noun plus an infinitive complement, e.g., the gun or the that-clause in (32). Verbs in this category include *see*, *hear*, and *notice*. Of course, *see* here is not used in the epistemic sense mentioned above (i.e., *see* in the sense of *understand*) but in the sensory sense as shown in the following example found in Dixon (2005): "'Mary hit John on the temple!' 'Yes, I saw.'" (p.134) As a sensory verb allowing object deletion, the deleted object in this case may be the hitting, the clause that "Mary hit John on the temple" or the noun plus infinitive complement "Mary hit John on the temple." A more detailed discussion of all the subcategories of object-deleting verbs and their typical types of deleted object will be offered in the section "Object-deleting verbs by semantic types" below.

Situational context-warranted object deletion is found mostly in instructional language on product labels and manuals as well as on warning signs. The deleted objects are concrete nouns, as seen in the following collected examples:

(34) *Bake* for 45 minutes ... (instruction on a cake mix box)
(35) *Shake* well before use. (instruction on medicine bottle)
(36) Don't *touch*! (a sign near a newly painted area)
(37) *Handle* with care. (instruction on a shipping box)

In each of the above examples, the deleted object of the verb is clear and specific: cake mix for *bake*,[6] the medicine in the bottle for *shake*, the newly painted area for *paint*, and the shipping box for *handle*.

Finally, there is another small group of situational context-warranted

object-deleting transitive verbs. They mostly appear in pairs in face-to-face interactions: *You lead and I follow*; *You wash and I dry* (when talking about washing dishes).

I consider both discourse and situational context-warranted object-deleting verbs true object-deleting verbs for the three compelling reasons already given: 1) there is no meaning shift; 2) the deleted objects are "definite objects" easily recoverable from the discourse or situational context; and 3) these verbs cannot function meaningfully without a discourse or situational context, as shown in examples (38)–(41):

(38) *I *explained* yesterday.	(unless in a discourse context where what was explained was known)
(39) *I will *promise* tomorrow.	(unless in a discourse context)
(40) *Don't *close*.	(unless as a sign on a door, window, etc.)
(41) **Discard* after use.	(unless as an instruction on something like plastic gloves)

Table 1 summarizes the classification framework. It highlights the main syntactic, semantic, and discourse characteristics of the use of each of the four types of verbs used without an object.

Table 1: Classification of verbs used without an object

Category	Examples	Syntactic, Semantic, and Discourse Characteristics
Pure Intransitive	*arrive, come, jog, rise, sleep*	They are inherently intransitive and are almost never used transitively. The theta role of the subject is typically **agent**.
Ergative Intransitive (including **Pseudo Intransitive**)	*break, change, increase, move, open* (pseudo: *reads smoothly, sells well)*	The theta role of the subject is **theme**. When used intransitively, the subject of such a verb is the same as the object when the verb is used transitively.
Transitive-Converted Intransitive Verbs of Activity	*eat, drink, hunt, knit, read*	1. The theta role of the subject is **agent** and the subject of such a verb is still the same as it is when it is used transitively, yet the focus of meaning has shifted to the verb (activity) from the object. 2. There is usually no specific deleted object. 3. These verbs can function this way without a discourse or situational context.

(continued)

Category	Examples	Syntactic, Semantic, and Discourse Characteristics
Object Deleting (Both discourse and situational context warranted)	Discourse Context: *accept, deliver, find out, know, promise, see* Situational: *bake, freeze, heat, keep off, shake*	1. The theta role of the subject is typically **agent** and there is no meaning shift when the verb is used without the object. 2. There is a specific deleted object. 3. These verbs cannot be used this way without a clear discourse or situational context that allows the recovery of the deleted object.

It should be emphasized again that object-deleting verbs, especially discourse-context warranted ones, are not large in number, and, as some scholars (e.g., Dixon, 2005; Huddleston & Pullum, 2002; Quirk, et al., 1985) have pointed out, most English transitive verbs cannot be used this way even when the discourse context clearly indicates what the deleted object is (I observed examples [43] and [44] among Chinese speakers of English):

(42) *I'll open an account if you *open*. (Quirk, et al., 1985, p.905)
(43) *Please give me a book to read if you *have*.
(44) "Who made the cake?"
*"I *made*."

Object-Deleting Verbs by Semantic Types

Object-deleting verbs can be divided into five sub-semantic types: 1) epistemic or cognitive, 2) inquisitorial and explanatory, 3) sensory, 4) aspectual, and 5) action/performative.

The epistemic type includes verbs like *know*, *realize*, and *recall*. The omitted object, as mentioned earlier, is usually a *that/wh*-clause, or its pronoun *it/that* (examples [45]–[47] are from the BNC):

(45) He said, "But I don't want any pain." I said, "I *know*."
(46) But when had it [a book] first been published? I could not *recall*.
(47) I thought I saw something purple floating in the tide, a pair of trousers, or a skirt, an upside down umbrella even. In the twilight and without my glasses, I couldn't really *tell*.

In Example (45), what the second speaker knows is that the first speaker does not want any pain. In (46), the omitted object of the verb *recall* is when the book was first published. In (47), the deleted object of *tell* is what

was floating.

The inquisitional and explanatory type consists of verbs such as *ask*, *explain*, and *find out*. The deleted object is often a *wh*-clause (or its pronoun *it/that*) or a noun phrase (examples [48]–[50] are from the BNC):

(48) "Zam, what you been up to?" "Don't *ask*."

(49) I know what Bodo said about letting the matter lie, but I don't agree with him. We have a right to know what is going on, so I went to *find out*.

(50) Often they circulate these lists to local conservation and amenity groups, residents' associations and subscribers. Ring the local planning authority to *find out*.

While the omitted objects in (48) and (49) are *wh*-clauses, the deleted object in (50) is a noun phrase (i.e., the information about conservation groups and associations).

The sensory type, as mentioned earlier, is a small group because only a few sensory verbs may be used this way. The deleted object is mostly a noun, a [noun+infinitive/present participle] construction serving as objective complement, or a *that*-clause. Below are two examples from the BNC:

(51) The writing was on the wall but nobody *noticed*.

(52) [Sp1] "I've been knocking for ages and all ye do is laugh up at me."
[Sp2] "We never *heard*. We'd laugh up at nobody."
[Sp1] "Ye *heard* only too well. I'm going to tell Daddy on the pair of ye."

In (51), the omitted object of *notice* is either the noun phrase *writing on the wall* or the *that*-clause *the writing was on the wall*. In (52), what was never heard and what "ye heard" is people laughing at Speaker 1 where, in terms of structure, the noun *people* is the object and the infinitive *laugh at ...* is the objective complement.

The aspectual type, also a small group, includes *continue*, *halt*, *resume*, and *stop*. The omitted object is typically a noun phrase including the gerund form, as can be seen in the following BNC examples:

(53) Saints' coach Mike McClennan also hopes Kiwi George Mann, who has missed the last five matches with a back injury, will be fit to *resume*.

(54) I called her a little angel, but she got upset about that, so I *stopped*.

Based on the discourse context in (53), what McClennan hopes Mann

will be able to resume is playing for the Saints. In (54), the omitted object of *stopped* is *calling her a little angel*. It is paramount to note, however, that the object-deleting use of these aspectual verbs should not be confused with their ergative intransitive use where the omitted object becomes the subject and no object deletion is truly entailed:

Object deleting	*Ergative intransitive*
(55a) Mann will *resume* [playing].	(55b) The playing by Mann will *resume*.
(56a) I *stopped* [calling her angel].	(56b) The calling *stopped*.

The action/performative type is the largest group because it covers not only discourse context-warranted object-deleting verbs but also those warranted by situational context. It includes such diverse verbs as *accept*, *bake*, *decline*, *deliver*, *promise*, *paint*, and *wash*. As explained earlier, even verbs like *eat* and *read* are sometimes used this way when a specific object is deleted. The object of such a verb, with the exception of performative verbs like *promise* and *guarantee*, is almost exclusively a noun. For performative verbs, the object is often a *that/wh*-clause or an infinitive. The following are some examples of action/performative object-deleting verbs from the BNC:

(57) An attempt to include such a ban sank the last effort at constitutional reform, made by Congress in 1989. This time the government has little choice but to *accept*.
(58) Our food arrives ... Formality snaps in the waitress's throat, "*Enjoy*."
(59) He offered me a cigarette. I *declined*.
(60) "Now don't disturb Pet," Charlie warned. — "I won't Dad. I *promise*."
(61) "Did his general condition lead you to expect something of the sort?" Time to *consider*.

In examples (57), (58), and (59), the omitted objects are nouns: *constitutional reform* for *accept* in (57), *our food* that has just arrived for *enjoy* in (58), and *cigarette* or *the offer of a cigarette* for *declined* in (59). Yet in (60) and (61), the deleted objects are nominal clauses: a *that*-clause (i.e., *I won't disturb Pet*) for *promise* in (60) and a question clause (*Did his ...?*) for *consider* in (61). A summary of the object-deleting verbs by semantic types is provided in Table 2. It contains examples and the typical structural types of the deleted objects in each semantic type.

Table 2: Object-deleting verbs by semantic type

Type	Verbs	Structural Type of Deleted Object
Epistemic/ Cognitive	*forget, know, realize, remember, see, recall, tell understand*	*That/wh*-clause or its pronoun *it/ that*
Inquisitorial/ Explanatory	*ask, explain, find out, show*	*Whether/how* infinitive/clause or its pronoun *it/that*
Sensory	*hear, notice, see*	Clause/noun/noun + infinitive complement
Aspectual	*continue, halt, resume, stop*	Noun (often gerund)/infinitive
Action/ Performative	*accept, choose, clean, consider, decide, decline, deliver, help, paint, pay, promise, read, try, wash*	Noun (often concrete)/*that*-clause/ infinitive

Implications for Pedagogical Accounts and English Language Learning

Before I discuss the implications, it is important to note that the proposed classification framework may still not be the most accurate classification system that can be developed. Yet it is a worthwhile attempt at addressing an issue that has failed to receive due attention. More importantly, the presentation of the framework has clearly demonstrated how syntactic, semantic, and pragmatic theories may enable us to gain a better understanding of the English verbs used without an object. The value of the application of these theories is perhaps best shown in the way I have used discourse and pragmatic analyses to help differentiate object-deleting verbs from transitive-converted intransitive verbs, i.e., those that appear to have a deleted object but that in reality contain no specific object that has been referenced in the discourse context due to their focus on the activity rather than on the theme argument. In other words, the discussion of the framework has brought the treatment of intransitivity in grammar reference books and textbooks into meaningful dialogue with established syntactic, semantic, and pragmatic theories on the issue.

Specifically, this framework shows writers of English grammar reference books and textbooks the ways the established theories in question can be applied in the classification of verbs used without an object. It should also provide them with a clearer picture regarding the issue of intransitivity in general, hence allowing them to develop a more

systematic and accurate account of these English verbs. A more adequate linguistic description on this issue should, in turn, help English language learners in acquiring this aspect of the language more effectively. As mentioned above, English has been imprecisely described as a non pro-drop language, and there is no coverage of the issue of object deletion in English in the student grammar textbooks examined here. This lack of precise description and the lack of coverage of English object deletion practices can potentially hinder English as a Second Language (ESL) students in their learning of the English verb system, especially in grasping when and where object deletion is permitted in English.

In fact, research (Park, 2004;Wakabayashi & Negishi, 1998; Yuan, 1997; Zobl, 1994) has repeatedly shown that ESL learners whose native language allows extensive object deletion encounter serious difficulty in unlearning null objects or in learning non-null objects in English.[7] As long as English grammar reference books and textbooks fail to address object deletion in English, these ESL learners will miss the opportunity to become aware of the permissible, as well as non-permissible, object deletions in English. Without this awareness, when they come across object deletions in English such as those exemplified in the discussion above, these learners might mistakenly view these object deletions as positive evidence for the existence in English of the kind of extensive object deletion found in their native languages. In other words, these ESL learners may see the object deletions they encounter in English as a green light for transferring into English their native languages' broad practice of object deletion. To help prevent this problem from happening for these students will call for, among other things, grammar reference books and textbooks that provide adequate and accurate coverage of the practice of object deletion in English. My proposed classification framework pays special attention to the issue of object deletion and may, therefore, make a contribution in the endeavor to help these English students overcome the unique learning challenge they face.

CONCLUSION

In this paper, I have argued for a more accurate and systematic description of the English verbs used without an object. While many grammar books simply consider all such verbs intransitive, ignoring the object-deleting nature of some of the verbs, those books that have

touched on the issue of object deletion fail as a whole to render a clear and consistent classification of these verbs. In an attempt to address the problem, I have shown how syntactic, semantic, and pragmatic theories can guide us in clarifying some of the confusion. I have also presented a framework for classifying these verbs, using an approach that combines syntactic, semantic, and pragmatic analyses. The framework classifies the verbs into four categories based on their semantic and syntactic functions: pure intransitive, ergative intransitive, transitive-converted intransitive, and object deleting. The last category is further divided into five sub-semantic types: epistemic, inquisitional/explanatory, sensory, aspectual, and action/performative. Finally, I have also discussed how the framework can help writers of grammar reference books and textbooks describe these English verbs more accurately and systematically, and how it may in turn assist English language learners in dealing with the challenges involved in grasping this difficult aspect of the English verb system.

Notes

1. Different terms have also been used to refer to verb uses where an object (or subject) is omitted, such as "object/subject deletion," "null arguments," or "null subjects/objects" (Hyams, 1994; Yuan, 1997), as well as "pro-drop" (White, 1985, 1989). For the sole purpose of consistency and simplicity, the term "object deleting/object deletion" will be used in this paper to refer to cases where a clear, specific object has been deleted, with only occasional use of the other terms when warranted by the discourse context.
2. The materials examined are as follows: 1) 15 grammar books: Baker (1995), Barry (1998), Biber, Johnsson, Leech, Conrad, & Finegan (1999), Carter & McCarthy (2006), Celce-Murcia & Larsen-Freeman (1999), Chalker & Weiner (1994), Curzan & Adams (2006), Dixon (2005), Downing & Locke (2002), Halliday (1994), Huddleston & Pullum (2002), Leech & Svartvik (2002), Quirk, Greenbaum, Leech, & Svartvik (1985), Parratt (2000), Wardhaugh (2003); 2) six major dictionaries: *Oxford English Dictionary* (*OED*) (2nd Ed.) (1989), the unabridged *Webster's Third New International Dictionary of the English Language* (1993), *Chambers Dictionary* (2003), *New Oxford American Dictionary* (2001), *Oxford American Dictionary of Current English* (1999), and *American Heritage Dictionary of the English Language* (3rd Ed.) (1992), as well as a few learner dictionaries such as *Cambridge Advanced Learner's Dictionary* (2nd Ed.) (2005) and *Macmillan English Dictionary for Advanced Learners* (2002); 3) four widely used grammar textbook series designed to help students learn English, including Azar (1999), Bland (2003), Elbaum (2001), and Larsen-Freeman (2000).

3. I owe this point to an anonymous reviewer.
4. Transitive-converted intransitive verbs of activity should also include a few other subcategories of transitive verbs used without an object, some of which have been addressed in detail in Huddleston & Pullum (2002) and Quirk, et al. (1985). The first are those that may be used with a reflexive pronoun but are used without it, e.g., *He's shaving* and *He's washing* because when they are so used, the focus is also on the activity, not the object. In fact, when the object becomes the focus, a speaker will provide it: *He's shaving his head* or *He's washing his face*. The second group consists of those used with a reciprocal pronoun object omitted, e.g., *They kissed* and *They embraced* where the reciprocal object *each other* has been left out. The reason for including these verbs as intransitive is that the focus is also on the action, not on the object. The third group includes those established idiomatic transitive verb phrases used without an object such as *give and take* and *pick and choose*. They should be placed in this intransitive group because there is often no definite object involved and the meaning is idiomatic, having nothing to do with the deleted object if there is one. For example, when we say we need to *give and take*, the meaning is that we need to be willing to compromise. There is really no specific implied object at all. Of course, both the verbs *give* and *take* may also be used without an object to mean give or take monetary support, as shown in the following BNC example: *Bernard Shaw won't give to charity*. Even here, the focus is still on the activity, not the object because, to focus on the object, a speaker will usually specify the type or amount of support that is given, as illustrated by the following two BNC examples: (i) *He volunteered to do two things: 1 to give half his property to charity; 2 to repay fourfold those he had cheated*; (ii) *The press agent succeeded by having Rockefeller give money to charity*.
5. Like *see*, the verb *deliver* can be used either as an intransitive verb or an object-deleting verb depending on the context and the intended meaning. In the cited example, *deliver* is object-deleting because Falcon aircraft is the apparent object, yet, in some other cases, the verb is used to mean "to produce results that one promises or is supposed to produce," as shown in the following BNC example: *When I agree to do something, I do it. I don't like taking something on and then failing to deliver*. By the same token, the verb *paint*, which is object-deleting in the sentence here, can also be a transitive-converted intransitive used to refer to an activity: *Well I'm a housewife and I've been painting most of the morning* (BNC). In short, quite a few verbs may function across categories, depending on their use in the context.
6. This object-deleting use of the verb *bake* should not be confused with the transitive-converted intransitive use where the focus is on activity, as can be seen in the following examples from the BNC: *It doesn't mean I won't do them all! 'Course I will. I'll draw. I'll bake*; *Granny said it gave her someone to talk to when she was baking or doing the housework*.
7. Research has also shown that many learners whose native language permits extensive subject deletions encounter great difficulty in learning non-null subjects in English. I am not addressing the null subject issue here because it

falls outside the purview of this paper. Furthermore, even my discussion of the ESL students' learning of null objects is very brief due to limited space and is included simply to illustrate how a more adequate language description may help language learning. A full-length article is needed to do justice to the issue of how language description may facilitate and hinder second language learning of both null subjects and null objects.

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Chapter 4

Adequate Language Description in L2 Research/Teaching: The Case of Pro-Drop Language Speakers Learning L2 English

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INTRODUCTION

English has been classified as a non-pro-drop language (Chomsky, 1981, 1995; Neeleman & Szendröi, 2005; Yuan, 1997). As such, it has often been contrasted with pro-drop languages, such as Spanish, Italian, Chinese, and Japanese, in the research on parameter resetting in SLA. Studies on the topic have produced some intriguing results, including the finding that there are some significant variations in the levels and areas of difficulty that speakers of different types of pro-drop language experience in unlearning null arguments or in learning non-null arguments in English. Although some hypotheses have been proposed to account for these variations, so far none (as I will show later) seems to be truly convincing. One likely stumbling block preventing researchers from finding a more satisfactory explanation appears to be the established assumption that English is a clear-cut non-pro-drop language — an assumption that is based on what I consider an overly simplistic linguistic description of the argument parameter of the English language. It is the purpose of this paper to examine the inadequacy of this linguistic description and explore its implications for research and pedagogy. Specifically, the paper will (1) critically review the key studies and hypotheses about the varying degrees and areas of difficulty that ESL learners encounter in learning non-null arguments, (2) scrutinize some major English grammar reference books and ESL student grammar textbooks regarding their description of the English argument parameter, and in the process present a more accurate description on the issue, and

(3) discuss how the new description can result in a better understanding of ESL learners' varying difficulties, and lead to an informed pedagogy suited to the specific needs of ESL learners of different L1 backgrounds to ensure more effective learning.

RESEARCH ON PRO-DROP RESETTING IN ESL

There has been substantial research on pro-drop resetting by ESL learners, especially by speakers of four pro-drop languages: Spanish, Italian, Chinese, and Japanese (García Mayo, 1998; Hyams, 1994; LaFond, 2003; Roebuck, Martínez-Arbelaiz, & Pérez-Silva, 1999; Toribio, Roebuck, & Lantolf, 1992; Tsimpli & Roussou, 1991; Wakabayashi, 1997, 2002; White, 1985, 1986, 1989; Yuan, 1997). The reason for the existing SLA research's focus on the speakers of the four languages is that these languages represent two typical but different types of pro-drop language. While Spanish and Italian license only null subjects, Chinese and Japanese permit both null subjects and null objects. Because of their much wider pro-drop practice, Chinese and Japanese have been classified as "radical pro-drop languages" (Neeleman & Szendröi, 2005). Furthermore, null subjects in Spanish and Italian may be compensated for by rich verbal inflections, so that the deleted subjects in these languages can be identified. Such is not the case, however, with Chinese and Japanese, as these languages lack the type of syntactic subject-verb agreement found in the two Romance languages. Null subjects/objects in Chinese and Japanese are warranted, instead, by discourse context or "topic chain" (Huang, 1984; Roebuck, Martínez-Arbelaiz, & Pérez-Silva, 1999). For this reason, some scholars consider null arguments in Chinese and Japanese as instances of "topic deletion" rather than "pro-drop" (Roebuck, et al., 1999: 256).

So far, research on ESL learners' pro-drop resetting has indicated that, in learning non-null subjects in English, speakers of the Romance pro-drop languages show significantly more difficulty than speakers of the Asian pro-drop languages (Roebuck, Martínez-Arbelaiz, & Pérez-Silva, 1999; Toribio, Roebuck, & Lantolf, 1992; Wakabayashi, 2002). In Toribio, Roebuck, & Lantolf's (1992) study, speakers of Chinese, Japanese, and Korean performed significantly better in noticing the impossibility of null subjects in English than speakers of Spanish and Italian. Wakabayashi's (1997) study, though including only Japanese and Spanish speakers and using different testing tasks, yielded similar findings. His subjects

were asked to read English sentences (some of which included missing subjects) on a computer screen and then to judge the grammaticality of the sentences. The results revealed that the Japanese subjects showed significantly better recognition of the problematic sentences in their reading response, and they also fared significantly better in the grammaticality judgment task than the Spanish subjects. In Roebuck, Martínez-Arbelaiz, & Pérez-Silva's (1999) study, which involved Chinese and Spanish ESL learners of two proficiency levels (Level 1 and Level 2), the subjects verbally repeated aurally presented English sentences, some of which contained missing subjects. The researchers calculated the instances where the subjects, in their verbal repetition, inserted the missing obligatory subjects. They then compared the performances between the two language groups and also between the two proficiency levels. It was found that the Chinese subjects did much better than the Spanish speakers, both as a whole group and at the two proficiency levels. Furthermore, and more interestingly, while the Chinese Level 1 subjects performed as well as the Chinese Level 2 subjects, the Level 1 Spanish students did significantly worse than the Level 2 Spanish students. This finding suggests that, for Chinese speakers, learning non-null subjects in English is not difficult even from the beginning, but that for Spanish speakers it is a great challenge from the very beginning, requiring time and effort for them to make significant progress.

In addition to the difference in difficulty between the Romance pro-drop language speakers and the Asian pro-drop language speakers in learning non-null subjects, research has also revealed a significant difference between Chinese and Japanese speakers' learning of non-null subjects and their learning of non-null objects in English. Several studies (Wakabayashi & Negishi, 1998; Yuan, 1997; Zobl, 1994) have shown that, while Chinese and Japanese learners of English have little trouble learning non-null subjects, they have serious difficulty learning non-null objects. In Zobl's (1994) study, Chinese ESL learners rejected significantly more null subjects than null objects. In other words, they accepted significantly more impermissible null objects. In a similar study, Yuan (1997) had his Chinese subjects perform an acceptability judgement of sentences with impermissible subject and object omissions. His results also indicate that the subjects accepted significantly more null objects than null subjects in English. Wakabayashi & Negishi's (1998) study of Japanese ESL learners also found that Japanese subjects generally allowed null objects but not

null subjects. The unique difficulty of learning English non-null objects for the speakers of Asian pro-drop languages can also been seen in Yip's (1995) finding, based on Chinese ESL learners' English language data, that even very advanced students still produce impermissible null objects.

How do we account for the apparently puzzling variations in the learners' difficulty in learning null arguments in English? Some intriguing hypotheses have been offered (Roebuck, et al., 1999; Toribio, et al., 1992; Wakabayashi, 2002; Yuan, 1997). Yet while these hypotheses suggest some unique and interesting perspectives on the issue, they do not appear truly convincing. In Toribio, Roebuck, & Lantolf's (1992) theory, the reason that the speakers of Asian pro-drop languages have less difficulty than the speakers of Romance pro-drop languages in recognizing impossible null subjects in English is that the Asian languages are more different from English than the Romance languages are, and the noticeable difference makes it less likely for the speakers of the Asian languages to transfer null subjects into English. A problem with this hypothesis is that if the differences between English and Asian languages prevent the speakers of the Asian language from transferring null subjects, it is not clear why these differences do not stop these same speakers from transferring null objects into English. As reported earlier, Chinese and Japanese ESL learners often transfer null objects into English. A similar issue can be found in Roebuck, et al.'s (1999) hypothesis, which attributes Chinese ESL learners' better performance than Spanish ESL learners in rejecting null subjects to the difference in the way null subjects are licensed in Chinese and Spanish. They argue that Spanish ESL learners accept null subjects in English because of the existence of the 3rd person singular *s* and the inflection of *be* in English — as in Spanish, where verb inflections can indicate omitted subjects. Chinese ESL learners, however, do not have such a licensing mechanism in their L1 because null subjects/objects in Chinese are warranted by topic-chain, not subject-verb agreement. Furthermore, they argue, the presence in English of the complementizer *that* or a *wh*-phrase (syntactic features absent in Chinese) serves as a block for topic-chain-driven null subjects, thus preventing Chinese learners from transferring null subjects. However, if these English syntactic features prohibit Chinese ESL learners from transferring null subjects, why do they not prevent them from transferring null objects?

There is a similar problem with Yuan's (1997) hypothesis that Chinese ESL learners' avoidance of null subjects, but use of null object

structures, is due to the presence of subject-verb agreement features, and the lack of object-verb agreement features in English. According to this theory, the subject-verb agreement features remind Chinese ESL learners to provide overt subjects, while the lack of verb-object agreement leads Chinese learners to overlook the need for overt objects. Yet if subject-verb agreement features help Chinese ESL learners reject null subjects, why do not these features help Spanish ESL learners do the same? In fact, according to Roebuck, et al.'s (1999) hypothesis, it is these agreement features in English that lead Spanish speakers to omit subjects in English, for these features may lead Spanish ESL learners to assume that just as in Spanish, null subjects are licensed in English because of verbal inflections indicating subjects indirectly. Yet how is it possible that the same English syntactic features serve entirely opposite functions for the two groups of ESL learners with different L1 backgrounds? Neither Yuan (1997) nor Roebuck, et al. (1999) addressed this question. It is the argument of this paper that this question can, however, be answered if we recognize the fact that English does allow some null subjects/objects, and consider the likely influence that such a fact may have on ESL learners' acquisition of non-null arguments.

Of course, some researchers (Toribio, Roebuck, & Lantolf, 1992; Roebuck, et al., 1999) have acknowledged in their discussions the existence of some subject omissions in English (albeit without mentioning object deletions), but have decided to classify English subject omissions as instances of "phonetic erosion" rather than subject deletion on the grounds that null subjects in English are limited in number and restricted to sentence-initial positions. As a result, they did not consider the possibility that English null subjects might influence the difficulty experienced by ESL learners in learning obligatory subjects. While their classification of English null subjects as "phonetic erosion" might have sound theoretical reasons in linguistic terms, the decision of Toribio, Roebuck, & Lantolf (1992) and Martínez-Arbelaiz & Pérez-Silva (1999) has nonetheless prevented them from looking at a possibly important factor influencing ESL pro-drop resetting. Recognizing and addressing null subjects/objects in English will give us a chance to look at this factor, and should in turn enable us to understand better the difficulties faced by ESL learners in pro-drop resetting. It is against this background that I shall now seek to demonstrate that, examined as a whole, most of the existing English grammar reference books and ESL student textbooks

are in general inadequate, inconsistent, and sometimes inaccurate in their description of the English argument parameter, in that English does allow discourse and situation-based null subjects and null objects.

NULL ARGUMENTS IN ENGLISH: AN INADEQUATELY COVERED ISSUE

English speakers probably have all heard utterances like the following (all taken from the British National Corpus (BNC)):

1. *Never heard of it.*
2. *Hope you like it.*
3. *Slice the aubergines, sprinkle with salt and leave for 30 min. Drain, wash and dry.*
4. *Don't touch.*
5. *Not everyone is like that. — I know.*

It is clear that in examples (1) and (2), the subject *I* is omitted; that in (3) the object of five verbs is omitted, while in (4) and (5), the objects of *touch* and *know* are deleted. On the basis of these examples, there is no question that null subjects and null objects exist in English. The question is how they are used and how widely distributed they are. An equally important question is how linguists have handled them. To help answer these questions, I examined the following:

1. Fifteen major grammar books: Baker (1995), Barry (1998), Biber, Johnsson, Leech, Conrad, & Finegan (1999), Carter & McCarthy (2006), Celce-Murcia & Larsen-Freeman (1999), Curzan & Adams (2006), Dixon (2005), Downing & Locke (2002), Halliday (1994), Huddleston & Pullum (2002), Kaplan (1995), Leech & Svartvik (2002), Parrott (2000), Quirk, et al. (1985), and Wardhaugh (2003);
2. Six major dictionaries: the *Oxford English Dictionary* (*OED*: Simpson & Weiner, 1989), the *Oxford American Dictionary of Current English* (1999), the *Oxford Dictionary of English Grammar* (Chalker & Weiner, 1994), the *Chambers Dictionary* (2003), the unabridged *Webster's Third New International Dictionary of the English Language* (2000), and *The American Heritage Dictionary of the English Language* (2006), as well as selected learner dictionaries such as the *Cambridge Advanced Learner's Dictionary* (2005) and the *Macmillan English Dictionary for Advanced Learners* (Rundell & Fox, 2002);

3. Four widely used ESL grammar textbook series: Larsen-Freeman's *Grammar Dimensions* (2000), Elbaum's *Grammar in Context* (2001), Bland's *Grammar Sense* (2003), and Azar's *Understanding and Using English Grammar* (1999).

Three important criteria were used in the selection of these materials: (1) contemporariness, (2) representativeness of their approaches to grammar, and (3) authority in the field (in terms of both author and publisher). First, most of the materials selected were published within the past decade — the only exceptions being Quirk, et al.'s (1985) seminal work on grammar, and the 1989 edition of the *OED*. Secondly, efforts were made to ensure that different approaches to grammar were represented in the books selected. For example, the selection includes traditional approaches (e.g., Quirk, et al., 1985), functional approaches (e.g., Halliday, 1994), semantic approaches (e.g., Dixon, 2005), communicative approaches (e.g., Leech & Svartvik, 2002), and corpus approaches (e.g., Biber, et al., 1999). Finally, most of the materials were written by renowned scholars in the field and published by prestigious publishers, such as Longman, Cambridge University Press, and Oxford University Press.

On the issue of null subjects in English, my scrutiny of these published materials shows that none of the ESL student grammar textbooks offers any discussion on the topic. As for the reference books, while many also give no coverage, a few (Biber, et al., 1999; Carter & McCarthy, 2006; Halliday, 1994; Quirk, et al., 1985) address the issue, but do so under the topic of ellipsis. The most recent of these publications (Biber, et al., 1999; Carter & McCarthy, 2006) are corpus-based, and give the best coverage on the topic. According to their findings from large corpora, null subjects are actually frequent in informal spoken English. For example, Biber, et al. (1999) find over 2,000 occurrences of null subjects per million words. The frequency increases to over 3,000 per million when instances of null subject+operator (i.e., subject+auxiliary and/or modal verb) omissions are included. English allows both subject and subject+operator omissions, as shown in the following examples cited from other sources:

6a. *What's concubine?*
6b. *Don't know, get a dictionary.*
7a. *Do you want me to go hire a video camera while I'm at it?*
7b. *Yeah, be great.*
8. *Know what I mean?*

(Cited by Biber, et al., 1999, p.1105.)

9a. *What happened to John?*

9b. *Had an accident.*

(Cited from Toribio, et al., 1992, by Roebuck, et al., 1999, p.254.)

10. *Sounds good to me.*

(Cited from Carter & McCarthy, 2006, P.181.)

While (6b), (9b), and (10) are examples of null subjects, (7b) and (8) are instances of subject+operator omissions. As these examples show, English null subjects are typically sentence-initial, and the omitted subject is usually a personal pronoun or a pronoun like *it* or *that*. Furthermore, English null subjects are used primarily in informal conversations and are discourse-, context- or situation-based — i.e., when a null subject is used, it is identifiable by the interlocutors involved in the situation. Moreover, research has also found extensive use of English null subjects in diaries (Haegeman & Ihsane, 2001).

While the use of null subjects in English is relatively simple, the use of null objects is much more complex and its description much more challenging.[1] A very large number of verbs in English can be used either with or without an object, e.g., *eat*, *read*, *play*, and *see*. Many of these verbs may be transitive. My examination of the published materials' treatment of these verbs indicates that, while all the ESL student textbooks treat these verbs used without an object exclusively as intransitive, the grammar reference books (including dictionaries) differ in their description. Although most of the reference books also classify these verbs used *with no object* as intransitive, a few make an effort to distinguish some of the verbs by calling them intransitive verbs "through conversion" (Quirk, et al., 1985; Wardhaugh, 2003), "object-deleting"/"object omission" verbs (Biber, et al., 1999, p.147; Dixon, 2005: 133; Huddleston & Pullum, 2002, p.301; Kaplan, 1995, p.177), or "absolute structure" (Simpson & Weiner, 1989). However, these reference books do not agree on which verbs or verb usages should be considered as object deletion. Overall, the existing grammar reference books fail to provide a systematic treatment of these English verbs used without an object, resulting in some inconsistencies and even confusion on this issue, both within and between books.

As mentioned above, grammarians disagree on the types of English verb or verb use that should be considered object-deleting. Downing & Locke (2002), Kaplan (1995), and Wardhaugh (2003), for example, listed only verbs like *eat*, *drink*, and *read* — common verbs whose frequency of

use without an object (intransitive) is about the same as their use with an object (transitive). Biber, et al. (1999), Dixon (2005), Huddleston & Pullum (2002), and Quirk, et al. (1985), on the other hand, include other types of verb that are used transitively most of the time, such as *deliver* and *wash* and *dry* in *We deliver* and *You wash* and *I dry*. More importantly, except Dixon (2005), none covers *explain*, *know*, *see*, and *understand*, a group of verbs that often drop the object, as shown in the following example:

11. Mother: *Don't bother your dad. He is very busy.*
    Daughter: *I know/I see/I understand.*

It is clear from the discourse context that what the daughter knows is that her father is busy and should not be bothered. Object deletion of this type is fairly common with these verbs in conversation. My search of the spoken register (10 million words) of the BNC finds some 380 such uses of *know* per million words, 110 per million in the case of *see*, and 6 per million in the case of *understand*. The low frequency in the case of *understand* is likely due to the fact that the word is rather formal, much more so than the other two words, and is therefore not used very frequently in conversation.

A puzzling point about the reference books' treatment of these verbs is that while almost none discusses the *explain*, *know*, and *see* type of verb as examples of object deletion, a few (e.g., Biber, et al., 1999, pp.386, 389) simply list them as intransitive verbs. In a section on the intransitive, monotransitive, and complex transitive use patterns of *see*, *promise*, and *tell*, Biber, et al. report the following (pp.386, 389; italics and bold original):

> Intransitive SV is found primarily in conversation and fiction:
> *I* ***see***. (CONV)
> *He couldn't* ***see*** *clearly*. (FICT)
> ...
> Finally both verbs [*promise* and *tell*] occur with intransitive patterns (SV):
> *Yes, I* ***promise!*** (FICT)
> *She said only time will* ***tell***. (NEWS)

The above examples appear in this form in Biber, et al. (1999) — i.e., no contextual information is given. There are, however, I suggest, two problems with the verb classifications they provide. First, semantically as well as syntactically, the verb *see* in *I see* does not actually function in the same way as the *see* in *He couldn't see clearly*. In the former, it most

likely means "understand", i.e., the speaker understands what his/her interlocutor has just said. Whatever the interlocutor said is the deleted object, and is clearly recoverable from the discourse context. In contrast, *see* in *He couldn't see clearly* deals with vision, i.e., the person had poor vision due to either a physical condition (e.g., an eye problem) or some external factor, such as a heavy fog. Used in this sense, *see* usually does not have a deleted object. The distinction between the two different uses of *see* is also made by *OED* (Simpson & Weiner, 1989, p.865), which lists the latter use of *see* as intransitive, but the *see* in I *see* as object-deleting, or an "absolute structure" in its terminology. Like *see* in *I see*, *promise* and *tell* in the above examples from Biber, et al. (1999) also function as object deletion. The deleted objects of the two verbs (i.e., what the speaker promises and what time will tell) are recoverable from the discourse contexts.

The second problem with Biber, et al.'s (1999) classification is that while they treat the above uses of *see*, *promise*, *tell* and similar verbs as "intransitive," rather than instances of object deletion, they consider verbs like *read*, *eat*, and *drink* used without an object as object-deleting, for they write in their discussion of object deletion: "Object-deleting verbs include: *drive*, *drink*, *eat*, *read*" (p.147). Such a classification is problematic, because we actually have more compelling reasons to classify the former type of verb (i.e., *know* and *promise*) as object-deleting than the latter type. First, there is no meaning shift in the former type of verb when used without an object, but there is usually such a semantic shift in the latter type, as illustrated in the following examples.

Object-deleting verbs:

12a. *John is sick.*
Yes, I know that, poor fellow.

12b. *John is sick.*
I know, poor fellow.

13a. *I'm busy so I can't help you now.*
Okay, I understand that.

13b. *I'm busy so I can't help you now.*
Okay, I understand.

Questionable object-deleting verbs:

14. *John ate a burger. John ate.*

15. *Mary is reading the morning paper. Mary is reading.*

As some linguists (e.g., García Velasco & Muñoz, 2002; Quirk, et al., 1985) have pointed out, in the second type of what I call questionable object-

deleting verbs, their shift in function from transitive to intransitive often involves a change in the focus of meaning from the object in the transitive use to the activity (the verb) itself in the intransitive use. There is no such semantic shift resulting from the object-deleting verbs' change in their syntactic function.

The second compelling reason is that, according to Fillmore (1986), García Velasco & Muñoz (2002), and Groefsema (1995), the supposedly deleted objects of the questionable object-deleting verbs are, in most cases, "indefinite objects," i.e., there is no specific direct object in reference. For example, in the utterance *John already ate*, there is the possibility that even the speaker did not know what John ate. What the speaker knew and conveyed is that John did take in some food. In fact, García Velasco & Muñoz (2002, p.9) conducted a search of the BNC regarding such intransitive uses of *bake* and *eat*, and their findings indicate that "when used intransitively these verbs clearly take an activity reading focusing on the activity itself rather than on its product". In contrast, the deleted objects of true object-deleting verbs are specific or definite objects. For instance, in *I know* utterance in (12b), what the speaker knows is that John is sick.

The third compelling reason is that while the object-deleting verbs cannot be used without a discourse context even when they are accompanied by an adverbial of place or time, the questionable object-deleting verbs can be so used, as can be seen in the following examples:

Object deletion:

16. **He knows everyday.* (Listeners need to know "what he knows" for the utterance to be meaningful.)
17. **I knew last night.* (Listeners need to know "what I knew".)

Questionable object deletion:

18. *He reads everyday.*
19. *I ate last night.*

The fact that verbs like *know* and *understand* are object-deleting verbs can even be seen in the examples given by some reference books to illustrate them as intransitive verbs. For instance, in explaining *know* as an intransitive verb, the *Cambridge Advanced Learner's Dictionary* (2005) and *Macmillan English Dictionary for Advanced Learners* (Rundell & Fox, 2002) use the following examples:

20. *Where did he go? I don't know.* (*Cambridge*, 2005, p.704)
21. *Have they arrived? I don't know.* (Rundell & Fox, 2002, p.790)

Obviously, without the first sentence in each pair, the second sentence is not meaningful. Thus, the verb *know* in both examples is not intransitive, as the two learner dictionaries claim. Based on the above semantic and syntactic analysis, the *know* and *see* group of verbs is obviously a much more prototypical type of object-deleting verb than the *eat* and *read* group. It is regrettable that this more prototypical type of object-deleting verbs has been left out in almost all the reference books.

Of course, the most important finding from the above discussion is that English does allow object deletion or null objects, although their use is not widespread. Basically there are only two types of context in which a group of verbs can drop their objects: discourse context and situational context.

The number of object-deleting verbs warranted by discourse context is not very large, and includes, together with a few others, *ask*, *deliver*, *explain*, *find out*, *know*, *promise*, *see*, *show*, and *understand*. They are used mostly in face-to-face interactions. Otherwise, the discourse context must make the deleted object easily identifiable: "*This facility receives 'green' Falcon 10 and 20 aircraft direct from France, and installs interiors and avionics, and also* ***paints*** *and* ***delivers*** *direct to the corporate customer*" (Biber, et al., 1999, p.147). It is clear that, in this written passage, the deleted object of *paints and delivers* is the Falcon aircraft. Object-deleting verbs warranted by discourse context fall into two subcategories: those whose deleted objects are typically *that* clauses, such as *know* and *understand*, and those whose deleted objects are typically concrete noun phrases, such as *deliver* and *dry*.

Object deletion warranted by situational context is found mostly in instructional texts, on product labels and manuals, and on warning signs. These deleted objects are concrete nouns:

22. *Bake for 45 minutes.* (instruction on packet of cake mix)
23. *Shake well before use.* (instruction on medicine bottle)
24. *Don't touch!* (sign near newly painted area)
25. *Keep off.* (a sign near private property)

IMPLICATIONS FOR EXPLAINING DIFFERENCES IN ESL LEARNER DIFFICULTIES

Given the existence of discourse/situation-based null subjects and objects in English and their quite common occurrence, especially in

spoken English, we can expect that ESL learners will encounter them, at least occasionally. Seeing null arguments in English, then, speakers of pro-drop languages may incorrectly view them as positive evidence for licensing their L1 type of pro-drop in English. This misleading evidence may then add to the difficulty that ESL learners with a pro-drop L1 have in resetting the pro-drop parameter. Research in SLA has shown that in parameter resetting, learners with an L1 that has the superset setting experience great difficulty in resetting the parameter when learning an L2 that has the subset, while little difficulty is involved in the reverse situation, in which speakers with a subset L1 are learning a superset L2 (Gass & Selinker, 2001; Towell & Hawkins, 1994; White, 1989). In the case of the argument parameter, pro-drop languages form the superset because they allow both null and overt arguments (e.g., in Spanish, both null subjects and overt subjects are acceptable), whereas non-pro-drop languages constitute the subset because they permit only overt arguments, i.e., they do not allow null arguments. It thus follows, on the basis of SLA research, that moving from the subset setting (e.g., English) to the superset (e.g., Spanish) should not be difficult because (1) the subset setting also exists in the superset (i.e., overt subjects are permitted in a superset language) and (2) positive evidence of the superset setting (i.e., the presence of null subjects) is available to help the learner in correctly resetting the parameter.

In contrast, moving from the superset setting (e.g., Spanish) to the subset (e.g., English) will be much more challenging, because there is no positive evidence available to inform the learner that the target language parameter setting is the subset — i.e., there is no positive evidence for them to reset the setting from the superset to the subset. Therefore, learners from a superset language will probably use the superset setting incorrectly in the target language, resulting in negative transfer. Such negative transfer will be even more likely when there is misleading evidence such as null arguments in English. As I have suggested, these English null arguments could be easily misunderstood by speakers of pro-drop languages as "positive" evidence for classifying English as a language having the superset setting. In fact, this type of misinterpretation of data by L2 learners is not uncommon. As Towell & Hawkins (1994, p.117) point out, L2 learners often "misanalyse the L2 data they are exposed to, in order to make it confirm as far possible to the parameter values imposed by the L1". It is thus logical for the speakers of the two different types of pro-drop languages in our examination (Romance vs. Asian pro-drop languages) to

misinterpret the data differently according to their L1.

For speakers of pro-drop languages such as Spanish or Italian, the presence of null subjects plus the subject-verb agreement features in English (3rd person singular and the inflected *be*) may constitute enough "positive" evidence for assuming that subject agreement verb inflections license null subjects in English. As mentioned above, null subject sentences like the following are not uncommon in speech (all examples from the BNC):

26. *Look forward to seeing you again in six weeks.*
27a. *Hope I'm not late.*
27b. *Hope it's good.*
28. *Looks good.*
29. *Sounds good.*

When Spanish and Italian learners of English hear these utterances, they are likely to note two important features. First, there are no subjects in these English sentences. Second, subject-verb agreement is required in English, as shown in the verb inflections in these examples (e.g., the 3rd person singular in (28) and (29) as opposed to the 1st person in 26 and 27, and the *be* verb inflection in (27a) and (27b)). As these two grammatical features (null subjects and verb inflection) match those of their L1, it would be very natural for Spanish and Italian speakers to assume that their L1 pro-drop rule applies in English, resulting in a wide use of null subjects in their English. There is no transfer of null objects by these speakers, because (as indicated earlier) languages such as Spanish and Italian do not license null objects, and furthermore there is no verb-object agreement in English. These two factors help prevent Spanish and Italian speakers from seeing the occurrence of null object utterances in English as a license for null objects.

However, null arguments in English may lead to a very different response from Chinese and Japanese ESL learners, due to (among other things) language differences. At first glance, the existence of English null subjects and objects and the fact that such deletions are discourse-, situation-, or context-warranted may seem to constitute convincing evidence for justifying the transfer of their L1 discourse/topic-chain-warranted null arguments into English. For instance, the English utterance *Sounds good* is typically a response to some idea or suggestion (i.e., a topic). The deleted subject is usually either *it* or *that*. Such a null subject appears exactly like the null arguments warranted by topic chain which

are common in languages such as Chinese and Japanese. Thus speakers of such a language should be expected to transfer their L1 rule. However, as Yuan (1997) has argued, the subject-verb agreement inflections in English (a syntactic feature completely absent in their L1) may work as a block preventing Chinese and Japanese speakers from transferring null subjects. In other words, the 3rd person singular *s* and the inflection of (for example) the verb *to be* may remind them of the difference between English and their native language, and cause them to provide the subject in order to help them generate the correct verb form. On the other hand, the lack of agreement between verb and object in English (as in Chinese and Japanese) and the presence of English null objects may work as a catalyst, prompting them to transfer null objects from their L1.

This proposed theory, which incorporates some of the hypotheses from previous studies, can provide a good answer to the difficult question mentioned earlier as to why and how English subject-verb agreement features may be processed differently by speakers of two different types of language, i.e., how they can prompt Spanish and Italian speakers to transfer null subjects, but prevent Chinese and Japanese speakers from making such transfers.

IMPLICATION FOR SLA PEDAGOGY

Given the above discussion, it becomes clear that it is important to help ESL learners avoid the trap of mistaking permissible subject and object deletions in English as positive evidence for the use of null arguments in English. To avoid the trap, ESL learners will need to understand how the use of null subjects/objects in English differs from the pro-drop practice in their L1. In fact, recent research (García Mayo, 1998; Lai, 2006) has shown that teaching L2 argument parameter settings in comparison with those in students' L1 can significantly improve L2 students' learning of non-null arguments in English. In a study designed to be preceded and followed by tests, García Mayo (1998) gave her Spanish-speaking students explicit instruction on the argument parameter rules in English. In both the pre- and post-study tests, the subjects were asked to (1) judge the correctness of some English sentences involving (among other features) null subjects and (2) translate Spanish sentences into English. The results of the tests indicate that the subjects' post-study test performance on questions related to non-null subjects was significantly better than their pre-study test performance. In a study with a similar research design, Lai (2006) gave

her subjects (Taiwanese EFL students of two proficiency levels) explicit instructions and exercises about pro-drop parameter differences between English and Chinese. The pre-instruction and the post-instruction tests measured the subjects' grasp of English's non-null argument parameter via three measures: translation from Chinese to English, grammaticality judgment, and "think aloud" recordings. The analysis of the test results indicates that the students performed significantly better on the post-test. Both García Mayo's (1998) and Lai's (2006) studies clearly demonstrate the positive effect of instruction on pro-drop parameter resetting.

A weakness of Lai's (2006) study is that it focused more on the Chinese ESL students' learning of non-null subjects than on their learning of null objects. Such a focus was somewhat misguided because, as reported earlier, research has repeatedly shown that Chinese ESL learners have much less difficulty in learning non-null subjects than non-null objects. Furthermore, like all the other scholars who have examined Chinese ESL students' learning of non-null arguments (e.g., Yuan, 1997; Zobl, 1994), Lai treated English simply as a clear-cut non-pro-drop language — a practice that (as I have shown) is not warranted by the reality of the English language. Despite the misguided focus and the inaccurate assumption about the English argument parameter, Lai's (2006) instruction of pro-drop parameter resetting nonetheless yielded positive learning results. It may be expected that instruction based on a more accurate linguistic description and tailored to the unique needs of L2 learners of a given L1 group should then be even more beneficial and effective.

Given that instruction on pro-drop parameter resetting is helpful, and that ESL learners from different pro-drop L1 backgrounds face different challenges in learning non-null arguments, it will be very helpful to develop language descriptions and instructions tailored to the different needs of students of different L1 groups. For example, with the established knowledge that speakers of Romance pro-drop languages have problems in resetting the null subject parameter but do not have any difficulty with non-null objects, instruction for ESL learners from such an L1 background should concentrate exclusively on the learning of non-null subjects. Teaching materials and instructions for these learners should highlight the differences in the use of null subjects in English and their L1 Language description and learning activities both in textbooks and the classroom should aim to help the students figure out that null subjects in English are not licensed, as in their L1, but that English null subjects are confined to

certain verbs in sentence-initial positions, and limited mostly to singular 1st person (*I*) and 3rd person (*it*) used in face-to-face interactions. As an example, we can present the following pairs of sentences to compare and contrast the null-subject use between English and Spanish.

30a. *(It) sounds good.*
30b. *(Eso) tiene sentido* ["(It) has sense"].
31a. *(I) hope you're right.*
31b. *(Yo) espero que (tú) tengas razón* ["(I) hope that (you) have reason"].
32a. *He understands.*
32b. *(Él) entiende* ["(He) understands"].
33a. *We understand.*
33b. *(Nosotros) entendemos* ["(We) understand"].
34a. *They understand.*
34b. *(Ellos) entienden* ["(They) understand"].
35a. *I watched it.*
35b. *(Yo) lo miré* ["(I) it watched"].
36a. *He watched it.*
36b. *(Él) lo miró* ["(He) it watched"].
37a. *We watched it.*
37b. *(Nosotros) lo miramos* ["(We) it watched"].
38a. *They watched it.*
38b. *(Ellos) lo miraron* ["(They) it watched"].

Any acceptable null subject in the above examples is placed in parentheses. It is clear from these examples that while all the subjects in the Spanish sentences can be deleted, only two in English can (30a and 31a). Such a comparison would help raise Spanish ESL learners' awareness of the difference between the two languages. This contrastive knowledge should, in turn, help prevent them from viewing the limited occurrence of null subjects in English as evidence for allowing a broad agreement-based subject deletion.

However, language description and learning activities for ESL learners with a Chinese/Japanese type of pro-drop L1 should be very different. Having established that speakers of these languages have little difficulty learning to insert obligatory subjects in English but have great difficulty learning obligatory objects, the instructional focus should clearly be placed on the latter, the learning of non-null objects. Writers of reference books and teaching materials and classroom teachers should strive to help speakers of these languages understand that, while English

indeed allows some null objects, the number of English verbs that can be so used and the contexts in which they can be used are much more limited than those in the learners' L1. In illustration, we may present the following pairs of sentences to compare and contrast the null object use in English and Chinese.

39a. *There's no class today.*
I know (that).
39b. *jintian mei ke* ["Today no class"].
(wo) zhidao ["(I) know"].
40a. *Do you like the book?*
Yes, I like it.
40b. *ni xihuan zhe ben shu ma* ["You like this book [question marker]"]?
(wo) xihuan ["(I) like"].
41a. *Please give me Tom's address if you have it.*
41b. *qing gei wo Li de dizhi ruguo ni you* ["Please give me Li's address if you have"].
42a. *If you buy a car, I'll also buy one.*
42b. *ruguo ni mai che, wo ye mai* ["If you buy car, I also buy"].

From these examples, one can see clearly that object deletion is limited in English compared with that in Chinese. One can deduce from examples like (40a), (41a), and (42a) that object deletion in English is not allowed for most verbs, even though the objects in these examples could easily be recovered from the discourse context. In contrast with English, object deletion in Chinese is always permitted as long as the deleted object is identifiable from the contextual information.

There is another point to which we need to draw Chinese ESL students' attention when teaching the differences in object deletion between English and Chinese: the common use of an auxiliary alone (such as *do* and *have*) in English as a response to a question. For example, in (40a), the typical response to *Do you like the book?* is not really *Yes, I like it* but *Yes, I do*, where *do* stands for the verb *like* and the object pronoun *it*. In other words, both the verb and the object are deleted. Such use of an auxiliary with the verb and object deleted may be mistaken by Chinese ESL learners as evidence for object deletion. Given that auxiliary-based substitutions and omissions are very common in English speech, it is extremely important that these learners understand that, whenever an auxiliary is used in such a case, both the verb and the object are omitted. In other words, it is not a case of object deletion. In fact, no object deletion alone is allowed in such cases in English, as can be seen in examples

(43a) and (44a), contrasted with their Chinese counterparts (43b and 44b) to highlight the differences between the two languages:

43a. *Do you play golf?*
Yes, I do. [But not: *I do play.*]
43b. *ni da gaoerfuqiu ma* ["You play golf [question marker]"]*?*
(wo) da ["(I) play"].
44a. *Have you seen the movie?*
Yes, I have. [But not: *I've seen.*]
44b. *ni kan guo zhe ge dianying ma* ["You see already the movie [question marker]"]*?*
(wo) kan guo ["(I) see already"].

These examples show that, in English, verb+object deletion is permitted with the use of an auxiliary, but not object deletion alone, as opposed to the practice in Chinese. Contrastive analyses like all the above examples should help Chinese ESL learners and those with a similar pro-drop L1 avoid mistakenly viewing English null objects as positive evidence for licensing a broader use of null objects, hence decreasing their tendency to make null-object transfer.

CONCLUSION

This paper has demonstrated the inadequacy of the existing description of the English language's argument parameter in the major English grammar reference books and some ESL student textbooks, and has showed that English allows some discourse and situation-based null subjects and objects. It has also illustrated how a more accurate description of the English argument parameter may result in a better understanding of the puzzling variations in the levels and areas of difficulty for speakers of different pro-drop languages learning non-null arguments in English, and how this more accurate description can lead to informed instruction tailored to the unique needs of learners from different L1 backgrounds.

Notes

1. The following discussion on *object* deletion and the reference books' treatment of verbs used without an object is drawn from Liu (2008), i.e., the previous chapter (Chapter 3) of this book.

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Chapter 5

Corpus-Based Lexico-Grammatical Approach to Grammar Instruction in EFL and ESL Contexts

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INTRODUCTION

With new understandings about grammar arising from linguistics and applied linguistics and with the rapid advancement of educational technology, novel theories and teaching practices for grammar instruction have been proposed, including teaching grammar in discourse contexts, approaching grammar from a lexicogrammatical perspective, and using corpus data-driven learning. So far, however, there has been little empirical research on the effectiveness of these new theories and practices. An important question for language educators is whether the new theories and approaches are applicable and effective. To help answer this question, a study, funded by a grant from The International Research Foundation for English Language Education (TIRF), was conducted on the effectiveness of integrating these theories as a unified approach (i.e., using corpus and contextualized lexicogrammar together) in grammar instruction in both foreign and second language contexts. This article reports on the study and its findings about, among other things, the approach's benefits and challenges.

LITERATURE REVIEW

The past decade has witnessed a revived interest in grammar teaching in foreign and second language learning as evidenced by the many publications on the issue, including those demonstrating the importance and benefits of grammar instruction on students' language acquisition

(Ellis, 2005; Ellis, 2001, 2002; Philp, 2003; Yuan & Ellis, 2003) and those advocating new theories and approaches to grammar instruction (Conrad, 2000; Ellis, 1995; Francis, 1993; Hahn, 2000; Hinkel & Fotos, 2002; Hughes & McCarthy, 1998; Johns, 1994; Larsen-Freeman, 2002, 2003; Liu & Master, 2003; Thornbury, 2001). Of the proposed theories and approaches, three stand out: grammar teaching in discourse contexts, teaching grammar with a lexicogrammatical approach, and corpus or data-driven teaching. However, these three, as I will show and emphasize below, are closely interrelated and should be implemented as a unified approach.

The call for teaching grammar in discourse contexts has its roots in functional grammar and is founded largely on the belief that grammar deals not only with forms but also with semantics (meaning), and pragmatics (context-appropriate use) (Celce-Murcia & Larsen-Freeman, 1999; Celce-Murcia & Olshtain, 2000; Halliday, 1994; Halliday & Hasan, 1989; Larsen-Freeman, 2002, 2003; McCarthy & Carter, 1994). Functional grammar focuses on meaning and treats grammar as a resource for language users in making meaning in a given social context. Thus, as Larsen-Freeman (2003) suggests, language form, meaning, and use should be approached as an integrated whole. The three aspects of grammar are interwoven because "a change in one will involve a change in another" (Celce-Murcia & Larsen-Freeman, 1999, p.4). English language students should learn not only how to use correct grammatical forms but also how to use them in a meaningful and appropriate way. Traditional grammar teaching, however, focuses on grammatical forms while paying little attention to their discourse contexts, thus failing to address adequately *when* and *why* a grammatical form is used in a given context. As a result, students often do not know how to use grammatical forms meaningfully and appropriately. Teaching grammar in discourse contexts, in contrast, helps students examine and learn how given forms are used in contexts for meaningful communication.

Lexicogrammar views lexicon and grammar as two inherently connected parts of a single entity, challenging the traditional "wisdom of postulating separate domains of lexis and syntax" (Sinclair, 1991, p.104). In this view, "a grammatical structure may be lexically restricted" (Francis, 1993, p.142) and, conversely, lexical items are often grammatical in nature, for the use of a lexical item often has grammatical implications (Biber, Conrad, & Reppen, 1998; Conrad, 2000; Hunston & Francis, 2000). Many corpus studies have exhibited this close lexical and grammatical connection

(Biber, et al., 1998; Biber, et al., 1999; Francis, Hunston, & Manning, 1996, 1998; Hunston & Francis, 2000). There has also been increasing evidence in applied linguistics showing the importance of contextual patterns in language use and learning (Hunston & Francis, 2000). In light of these findings, many scholars have argued for the use of lexicogrammatical approach in language instruction (Aston, 2001; Clear, 2000; Schmitt, 2004, 2005; Sinclair, 1991). They base their argument on the fact that:

> Insofar as different words appear to have distinctive collocational, colligational, semantic, pragmatic and generic associations, ... every word may have its own grammar in these respects, a grammar which can only be acquired through experience of its typical contextual patternings. (Aston, 2001, p.15)

It thus follows that vocabulary learning and grammar learning often take place simultaneously and that the teaching of the two should be conducted jointly.

The suggestion of using corpus-analysis in grammar teaching has resulted from rapid advancement in computer technology and corpus linguistics in recent years, which has shown unprecedented potential for language learning and teaching. Corpus concordance not only makes accessible an enormous amount of authentic language input but also creates various inductive and deductive language learning opportunities not available in the past (Aston, 2001; Conrad, 2000; Francis, 1993; Hunston, 2002; Hunston & Francis, 1998; Johns, 1994; Sinclair, 2004; Stevens, 1995). In terms of inductive learning, language learners observe grammar and vocabulary usages in concordance data, and then discover and generalize findings about usage patterns and rules. In deductive learning, language learners use corpora either to test the rules and patterns they have learned or to classify concordance data by applying the rules and patterns. It has been argued that such learning activities, especially the inductive type, motivate students and promote discovering learning, and they are "particularly effective for the acquisition of grammar and vocabulary" because they help learners to notice and retain lexicogrammatical usage patterns better by engaging them in "deeper [language] processing" (Aston, 2001, p.19). Francis (1993) and Johns (1994) also contend that conducting concordance analyses of recurrent collocational and colligational[1] patterns leads to acquisition of more useful general grammatical rules. Furthermore, corpus data offers contextualized language use, which enables learners to understand better what Larsen-Freeman (2002) calls

"grammar of choice" in language use, a choice that native speakers often make according to context. It is important to note that corpus-driven learning is not appropriate for beginning or low-level students due to their limited English proficiency (Aston, 2001). In fact, even for higher-level students, a guided and controlled corpus search is needed for effective learning (Aston, 2001).

Although arising from different theoretical domains, the three suggested practices (teaching grammar in context, approaching grammar from lexicogrammatical perspective, and using corpora in teaching lexicogrammar) are inherently connected as shown in many studies (Aston, 2001; Biber, et al., 1998; Conrad, 2000; Hunston & Francis, 2000). Specifically, for example, lexicogrammar relies heavily on "contextual patternings" (Aston, 2001, p.15). Identifying such patternings requires contextualized corpus analyses. Similarly, contextualized grammar teaching entails the analysis of contextualized grammar usages, an undertaking that calls for corpus study. In short, examined closely together, research findings have shown the need for a contextualized lexicogrammar approach to grammar instruction and the useful role that corpora can play in such teaching. In other words, the integration of corpus use, lexicogrammar, and contextualization in grammar teaching is not a random proposition, but one motivated by the inherent connection and interdependency found among the three practices. However, although there have been quite a few publications introducing the use of corpora in language teaching (Aston, 2001; Flowerdew, 1996; O'Keeffe & Farr, 2003; Tribble & Jones, 1997), little empirical research has been conducted on the effectiveness of these novel theories and practice. The present study, therefore, was conducted to examine whether and to what extent these new theories and practices are applicable and effective when used as a unified approach in the classroom.

METHODOLOGY

Settings and Participants

This study was conducted at one large university in southeast China and two universities in the U.S. (one in south-central and one in southeast U.S.), lasting one semester long at each school. English as a foreign language (EFL) and English as a second language (ESL) sites were included to allow a comparative study of the effectiveness of the new

teaching approach in two distinct learning environments. The participants at the Chinese university were five sections of the Essentials of English course for second year English majors (total number=160) and their respective instructors (all Chinese). The course was designed to provide students with the essential language skills including vocabulary, grammar, reading, and writing. The participants at the southeastern U.S. university comprised two Level–5 reading and structure classes (21 students) at the school's English Language Institute (where the highest level of classes is 6). Those at the south-central U.S. university comprised students enrolled in three English classes and their respective instructors. Two of them were composition classes for non-native speakers of English (27 students); the other one was a master's in Teaching English to Speakers of Other Language (MATESOL) grammar class, in which over 80% of the students were non-native speakers of English (28 such students). The two composition classes differed somewhat in language content/skill and the ESL students in the MA class possessed a somewhat higher English proficiency. All participants were included in the study for two reasons: (a) They were the only ESL classes available, and (b) The number of participants in the ESL setting would otherwise have been too small, for even with these students included, the number was still significantly lower than that in the EFL setting (76 vs. 160). To limit the effect that the difference in language contents might have on the study, efforts were made to align the classes' contents as closely as possible by making corpus-based lexicogrammar a focus of all the classes. Participants' English proficiency level was generally within the intermediate to upper intermediate range with some students in the MA grammar class reaching the advanced level. No low-level students were included because, as mentioned in the literature review, corpus-based learning would be too difficult for them.

It is important to note that, before the study, no electronic corpora were used in English language teaching at any of the participating schools. The corpus used in the study was the British National Corpus (BNC) and the BNC Baby.[2] The latter was the major source for most of the students, although some classes and students in the U.S. had access to the BNC via a free online interface (corpus.byu.edu/bnc) developed by Brigham Young University Professor Mark Davies.

Procedures

Prior to the study, the participating instructors underwent training

on corpus use and the issues of lexicogrammar and contextualization of grammar teaching. Since corpus use was an entirely new practice for the instructors, they received detailed, hands-on training on all of the basic corpus search functions, including concordancing and collocation. To gain an understanding of lexicogrammar, the instructors examined many language examples in which a close connection between grammar and lexis was shown. In the process of analyzing the examples, they learned that the syntactic and semantic patternings of verb and noun phrases constitute the foundations of corpus-based lexicogrammar (Francis, Hunston, & Manning, 1996; Hunston & Francis, 2000). This knowledge, in turn, helped them understand that lexicogrammatical teaching should focus on such patternings, although not at the expenses of other grammatical issues. Training also made the instructors aware of the limitations of corpus data and the danger of over-generalizing corpus findings so they could guard against such pitfalls in their teaching. To help appreciate the need for contextualization of grammar teaching, the instructors looked at many corpus examples that showed the importance of context in language users' lexicogrammatical choices.

During training, researchers and instructors also spent a substantial amount of time discussing how to effectively incorporate corpora and lexicogrammar into the existing language curriculum and developing teaching strategies, sample classroom activities, and sample lessons. In the process, many meaningful exchanges occurred. Some instructors raised questions about specific technical and practical issues, as well as concerns about the general applicability of the use of corpus data in language teaching. As researchers, we made every effort to these questions and concerns seriously. We acknowledged the challenges involved in using the approach, especially the use of a corpus, and looked at existing publications on the topic to understand how other professionals had handled these issues. Finally, we explored possible solutions and/or strategies for dealing with them. The instructors commented that they found the discussions to be very useful. At the end of the training, even though we did not reach a complete consensus on every issue, we developed two complete sample lessons as well as a written framework for the new teaching approach. The framework consisted of "goals and rationales for the approach," "guiding principles" for using the approach, and "recommended teaching strategies and techniques."

At the end of the study, a questionnaire with a student and an

instructor version (see Appendix) was given to the participants to obtain their assessment of the corpus-based lexicogrammatical teaching. Students at the Chinese university were allowed to answer the questionnaires either in English or Chinese so they could express themselves. Chinese instructors were given similar options for answering the questionnaires as well as writing their teaching journals/logs. Some students used Chinese or a mixture of both languages; all instructors, in contrast, answered the questionnaire in English, and only one wrote her teaching journal in Chinese. Data collected in Chinese were translated into English by the researchers (who were fluent in both languages).

Data

Major data for this study consist of the following: (a) students' work, including corpus search assignments, grammar exercises, written reports about their corpus data analyses and findings, and reflections on their corpus studies of lexicogrammar; (b) instructors' teaching logs, lesson plans, sample teaching activities, reflection journals, notes from instructor discussion meetings, and the authors' discussions with the instructors; and (c) students' and instructors' post-study questionnaires. The various sources of data were triangulated to enhance the validity and reliability of the results of the study. The questionnaire consisted of 10 open-ended questions on the students' version (13 on the instructors' version), as well as 5 Likert-Scale questions. The open-ended questions sought to obtain information regarding the participants' practices in and assessment of the use of corpora and lexicogrammar. The three extra open-ended questions on the instructors' version dealt with their experiences using corpora as a teaching tool. With the exception of these three questions (Items 11–13), items on versions of the questionnaire were similar, although some were worded differently to reflect the instructors' and students' respective perspectives. The Likert-Scale questions were intended to ascertain participants' overall assessment of the new teaching approach using a 1–5 rating scale. These questions were similar on both student and teacher versions except, again, for slight wording differences (e.g., "How much have you learned from the use of corpora?" on the student version, versus "How much have your students learned?" on the teacher version). Of 242 total students participating in the study, 198 returned the questionnaire, with 148 out of 160 in China and 50 out of 76 in the United States. With the eight teacher responses (four in each setting) responses added, the total

number of completed questionnaires was 206.

To help the reader better understand the study and the results, three teaching activities are presented here as additional data to show what was actually done in the classes. Descriptions of the activities are based on observational notes and/or instructors' teaching logs and journals and illustrated with samples of corpus data used and of work that students produced. The first activity relates to the use of concordance data by an instructor at the Chinese university to help her students understand the usage difference between "uninterested" and "disinterested." Apart from a definition for the words (e.g., "disinterested" means "free from bias and self-interest") and one example of the word "disinterested" used in the text, the students' textbook did not give any other example or information about the two words' meanings and usages. Noticing that her students had difficulty understanding the usage differences between the two words, the instructor decided to have her students examine some BNC data. She first put on the screen concordance data regarding the word "uninterested" (some examples are shown Figure 1) and asked the students to identify any usage patterns. Several students stated that the word was often followed by the prepositional phrase "in ..." The instructor acknowledged this observation and encouraged the students to look closely again for any other noticeable features. One student responded that the word was often preceded by a linking verb.

The instructor confirmed the answer and then reminded the students that it was similar in structure to the "be interested in," an expression opposite in meaning that the students had already learned. Afterwards, the instructor put on the screen some concordance examples of "disinterested" (see examples in Figure 1) and asked the students how this word differed from "uninterested" in its structural usage patterns. Students looked at the data for a couple of minutes with no answer. The instructor then asked the students to pay attention to the type of words that followed the "disinterested" in comparison to the type typically following "uninterested." With guidance, the students soon observed that "disinterested" was used mostly before a noun as an attributive adjectival (e.g., "disinterested observers"), whereas "uninterested" often as a predicative adjective (e.g., "is interested in ..."). Finally, the instructor asked the students whether they could usually find such usage information in a dictionary; many students answered "no."

Figure 1: Sample of BNC (2001) concordance examples for the use of *uninterested* and *disinterested*

1 of ordinary Hong Kong residents usually **uninterested** in politics. In sharp contrast to Britain's
2 this is now the main task. Mr Kinnock is **uninterested** in finding a visionary "big idea" for the p
3 Difference between the interested and the **uninterested**. At the same time the effect of televise
4 terested (Chapter 2). Those who remained **uninterested** in politics reacted by avoiding the new
5 shuffling ever closer to Louise, unaware or **uninterested** in the magic he and his house create.
6 e Asian shop steward) which was not only **uninterested** in their struggles but actively opposed
7 didates are concerned, a conscientious and **uninterested** student may very well do better than
8 in his absence, he would have been upset and **uninterested** in eating. It was sufficient for him

1 Derrida's admirers, and perhaps some **disinterested** observers, would reject such charges as
2 believe that literature was simply a matter of **disinterested** individual response; it was an inde
3 Well, A true gentleman, valorous in arms, **disinterested** and honourable. Then fled: That was
4 get, for it can not stand up by itself to **disinterested** scrutiny. Almost everything is wrong with
5 Some of that information has to be gathered by **disinterested** investigators, not by politicians
6 Nikol'skaia Komsomol; Yakovlev was a more **disinterested** outsider. Makarenko wrote: "The lo
7 centrists and cross-benchers who had a belief in **disinterested** enquiry and collecting and weig
8 and if Prof Paulos is not a wholly **disinterested** party in matters of numeracy, you will certainly

The second sample activity was one used in the composition classes at the south-central U.S. university to help students address the lexicogrammatical errors they made in their writing. When the instructors noticed errors in students' writing they believed students should be able to correct with the help of corpus data, they would mark such errors and have students work

on them during class in a computer lab. A scanned worksheet completed by a student is provided in Figure 2. As shown in this example, to complete the worksheet, a student needs (a) to list the lexicogrammatical problems that his/her instructor has marked; (b) to find examples from the BNC that use each lexicogrammatical item in the desired way and write one example down on the worksheet; and (c) to rewrite his/her original sentence using the information learned from the corpus. We can tell from the sample worksheet the first problem that the instructor wanted this student to address was the incorrect use of "to" in "contribute to." (The student had mistakenly used it as an infinitive sign instead of a preposition.) The second and third problems dealt with the difference between present and past participles used as adjectives. (This was an issue that, according to the instructor, many students in the class had difficulty with.) It is clear from the student's work that the problems were accurately addressed using the corpus information obtained.

Figure 2: Sample of corpus-based lexicogrammatical error worksheet

Computer Lab Worksheet (Assignment #2) **Name** _____
English Composition 2 **Spring 2006**

A. Write down the problems noted on your paper.

1. crazy mobs who contributed to ostracize her
2. bored and boring
3. interested and interesting

B. Find a sentence on the corpus that uses the word/phrase (for each of the sentences you wrote above) in the desired way. Write the sentence below.

1. Levin makes a special case for Debord as a film-maker whose arm was to contribute to the ultimate destruction of cinema as a spectacularist medium.
2. I'm bored. Wasn't that a damn boring game!
3. Helen is not interested in making lists about her life.
   Informal admissions are also interesting.

C. Describe how this word/phrase is used.

1. After the phrase "contribute to," most of sentence has noun, not a verb.
2. If something needs to be bored, it should be in passive position.
   However, boring accompanies something active.
3. Same pattern applies to "interested" and "interesting".
   "interested" for a passive thing and "interesting" for an active thing.

D. Rewrite your sentences using the information that you learned from the corpus

1. crazy mobs who contributed to Ostracizing her
2. The students are bored because of boring class.
3. The audiences were interested after the singer made the show interesting.

The third activity was often conducted in a Level 5 reading and structure class at the southeastern U.S. university's English Language Institute. In working on a new reading passage in class, students were asked to first find the meanings, usage patterns, and register information of the new words in the passage by using a dictionary and the BNC. Figure 3 shows a scanned copy of the work one student produced concerning the meaning and the usage patterns of the word "deplete" found in an article ("The Orphaned Swimming Pool") on which the class was working. In addition to a definition and two example sentences using "deplete," the student's work also included a printout of a chart generated from a BNC cross-register comparison regarding the use of the verb. Based on the student's work, it is clear that the student learned from the BNC data that "deplete" was used mostly in writing, especially academic writing (15 tokens), and seldom in speaking (0 tokens). Such register-specific usage information is very important for second language students learning how to use a word appropriately and in the right context.

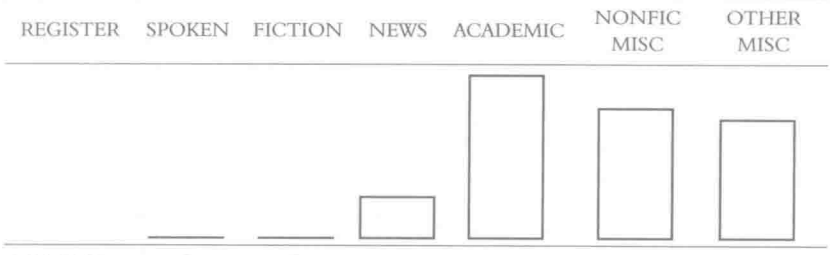
Figure 3: Sample of corpus-based vocabulary work

** Deplete (v): line 139

* To reduce sth. by a large amount so that there is not enough left

Example:

1. Food supplies were severely depleted.
2. The stock is expected to be depleted before new supplies can be found.



REGISTER	SPOKEN	FICTION	NEWS	ACADEMIC	NONFIC MISC	OTHER MISC
TOKENS	0	0	4	15	12	11
SIZE (MW)	10.33	16.19	10.64	15.43	16.63	28.39
PER MIL	**0.0**	**0.0**	**0.4**	**1.0**	**0.7**	**0.4**

RESULTS AND DISCUSSION

An analysis of all of the data has identified some beneficial effects, some challenges, and some useful strategies, in addition to factors that may

influence learners' experience in corpus-based lexicogrammar learning. In order to avoid repetition and to make the discussion more cogent, the results of the data (except the Likert-Scale questions) are discussed together and organized by themes of the findings rather than by the survey questions. The results of the Likert-Scale questions are presented separately after the discussion of the other data, as these questions provided a general assessment and were quantitative in nature. As most of the open-ended questions on the student and instructor versions were the same with only slight wording differences, the discussion of the findings from the questionnaire will cover both the students' and teachers' responses with each type of source specified when necessary.

Positive Effects

Enhanced language awareness and better command of lexicogrammatical rules/patterns

The first benefit of the use of the new teaching approach was enhanced language awareness and a better command of some lexicogramamtical usage rules and patterns, as reported by many of the participants. In answer to the first item on the questionnaire regarding what were the most useful and valuable things they learned in the course, a majority of the participants (118, or 59.6%) mentioned word and structural usage patterns. More importantly, in answer to Items 3 and 4 concerning what they had learned from corpus searches and what aspects of language they found the use of corpus searches most helpful in learning, more than two thirds (138, or 69.7%) wrote that lexicogrammatical usage rules and patterns, especially differences between synonymous lexicogrammatical items, had been the most helpful. Some elaborated on their answer by saying that the corpus data helped them learn lexicogrammatical usage information they could not have gained otherwise. As one student put it, "I solved some [grammar] problems that I had for a long time [by using corpus searches]." Quite a few commented that they obtained a lot of information that they could not have found in dictionaries, a source they used to rely on heavily for lexicogrammar learning. In fact, effective learning of lexicogrammatical patterns was clearly shown in two of the three corpus learning activities mentioned (i.e., the ones on "disinterested" vs. "uninterested" and phrasal verbs vs. one-word verbs). As indirect evidence of the value of corpus research in learning lexicogrammatical patterns, the search for such patterns was the most frequently conducted type of search

activity reported by the majority of the students. It was also reported as the type of search activity they would like to do more frequently in the future.

Greater appreciation of the importance of context in lexicogrammatical choices

The use of corpus-based lexicogrammar also has led to a greater appreciation of the importance of context in language use. Over half of the participants mentioned that the study had made them understand better how lexicogrammar use is often affected by context. A similar number of the participants listed understanding the importance of context in lexicogrammar use as the most valuable thing they had learned. Furthermore, in answering the question of what they thought the role of context was in lexicogrammar use based on their learning in the course (Item 8), 182 (88.3%) participants wrote that it was "important" or "very important." To elaborate, both on the questionnaire and in their reflection papers, some participants explained that examining lexicogrammatical rules and patterns gave them many opportunities to see firsthand how context determines people's choice of lexicogrammatical items and how form, meaning, and use are interwoven, resulting in unique usage patterns. For example, one group of students in the south-central U.S. school examined the use patterns of "keep+noun+adjectival" versus "leave+noun+adjectival"; they found that "keep" is usually followed by a positive adjectival (i.e., used positively), as shown in examples like "kept someone alive/energetic," whereas "leave" is often used negatively, as in "left someone dead/injured." The finding appears to have opened the students' eyes to the connection between form, meaning, and pragmatics and the importance of context. One member of the group wrote in the reflection paper, "Before I had only examined sentences out of context. By examining those sentences in context I was able to see why we make the word choices that we do when using 'leave' and 'keep.'"

To give another example, one group's corpus search project about the passive use of the verb "give" showed a very significant difference across BNC Baby's four sub-corpora. Out of the 1,455 tokens of passive "give," only 98 (6.7%) were in the Spoken category, 230 (15.8%) were in Written Fiction, and 371 (25.5%) were in Written Newspaper. There were 756 (52%) in Written Academic. This finding clearly suggests the rarity of use of the passive form in spoken English but a high frequency in formal writing, and it led one member of the group to the following reflection:

> I'd never given much thought to the passive voice in English before ... Now I see that it is not only important to know how to use the passive voice, but also when to use it, which is something I had never considered.

The research of lexicogrammatical usage patterns across registers (i.e., sub-corpora) that many of the students conducted was especially helpful in enhancing their understanding of the importance of context in grammar. Many students commented that they appreciated the BNC search capability because it provided them with the contextualized usage information they could not gain otherwise. As one student stated, "The four types [sub-corpora] also can help me develop my sense for situational use which I have not been able to acquire from any book and instruction." Corpora also provide contextual information that many students believe helps them understand language usage better. For example, one student conducted a corpus search about the phrasal verb "back up" in the different sub-corpora and found that in the written language, especially academic and journalistic writing, it was used mostly to mean "support," but in spoken language, it often meant "move backwards or reverse." Referring to the value of contextual information that corpora furnish, one student wrote in the questionnaire, "It [corpus data] is very helpful because it's easier to understand the words through contextualization."

Increased critical understanding of grammar

Another positive impact of the use of corpora and lexicogrammar is an increased critical understanding of grammar on the part of both the students and the instructors. One student wrote, in answer to the question about the most useful and valuable things learned (Item 1):

> Before the course, I learned traditional grammar from my Korean teachers. I followed their concepts [rules] and indications [explanations] without thinking why they [the rules] should be considered like that ... [Now I have developed] a good habit to judge whether a grammatical rule is correct...

Similarly, another student stated the following regarding the most valuable things gained:

> Grammar can't be taught like a math formula: applying a fixed formula to the sentences without the understanding of the meaning in context. Vocabulary can't be just learned by memorizing without understanding how actual words are used in a sentence.

The participants' enhanced critical understanding of grammar also can be

seen in their responses to the question (Item 9) about whether their corpus research findings have challenged the traditional view about grammar being comprised of rigid rules that native speakers follow. A majority (68%) answered "yes," 26% said "no," and 6% did not respond. One student who answered "yes" explained, "Some traditional grammar rules tend to be broken, and especially [between the] Demographic Spoken and Written Academic [sub-corpora], the rules seem to be different." Another student wrote, "Our group [corpus] research results are somewhat different from [the description in] the textbook. As a result, I now know the grammar textbook is not always correct." In short, a majority of the participants showed a more critical view in their response on this issue.

Promoted discovery learning and made learning more interesting and effective

In the questionnaire, reflection papers, and journals, quite a few students and instructors spoke highly of the discovery learning opportunities that corpus searches provided and promoted. More than a third of the students put down enhancement of discovery learning skills as one of the most useful and valuable things they learned in the course. Furthermore, quite a few students commented that they really enjoyed the discovery learning aspect of the corpus searches. One student wrote, "Comparing the different sentences and seeing how the speakers and writers used the same word or structure for varying effects was a surprisingly effective way to study not only English structure but usage by real people ..." Another student stated the point more explicitly: "I just can type words or phrases. Then a lot of examples come up on the screen in front of me. From the examples, I can figure out some rules of English." (emphasis added)

Quite a few students also mentioned in the questionnaire that they remember better the things they learned by conducting corpus analyses than things they learned without such analyses. A few instructors discussed this point in their teaching journals, too. One instructor at the Chinese university summarized the value of discovery learning this way:

> I've found that using corpus searches allowed the students to infer the unique features and patterns [of the lexicogrammatical items they were learning] and then to compare their findings with the descriptions in the textbook. As a result, they gain a better understanding and better retention of what they were learning.

Several instructors at the Chinese university expressed great appreciation for the fact that corpus data could provide many authentic examples instantly for

explaining difficult lexicogrammatical issues, something not possible through any other means. One Chinese instructor mentioned in her teaching log that, in the past, she had had great difficulty teaching students the use of "lest" and its following clause due to lack of good examples. Now, she said, the concordance BNC data made this task much easier. Her students were able to see a variety of examples and to learn, without too much difficulty, the different meanings of the "lest"-led clauses and the verb tense structure used in them. Another Chinese instructor also mentioned that corpus data made difficult lexicogrammatical points easier for students to understand. She said she used to have great difficulty explaining the different uses of "in time" as shown in "He arrived in time for class" and "In time, he will understand my point." Now, instead of explaining the difference with a couple of fabricated sentences, she was able to have the students conduct a concordance corpus search of the phrase and go over the various examples to identify the difference from the two usages. After some discussion, the students seemed to have attained a good understanding of the difference.

Another positive effect of corpus searches for the instructors is that by working with students in their searches and reading their search assignments, they had the opportunity to observe and understand students' discovery learning and thinking processes. For example, reflecting on how much she had learned from the way her students used corpus data to figure out the differences among modal verbs, one instructor in the south-central U.S. university wrote: "Interestingly enough, I think I learned as much as the students did, not about modals themselves but about how the students understand modals." She then went on to elaborate on how her students viewed modals as tensed action verbs, something she said she had never previously considered.

Challenges

Our data analysis also reveals many challenges in corpus-based lexicogrammar learning. The greatest challenge to the students was how to effectively analyze concordance data to identify lexicogrammatical usage rules and patterns. Almost all the students mentioned this challenge either directly or indirectly in their answer to the question about what they considered as the greatest challenge(s) in using corpora (Item 5). Many of them stated that they often felt overwhelmed by the extremely large number of examples generated by their searches and the time required for going over and analyzing the data. The problem was sometimes further exacerbated

when many of the generated examples were not relevant to their particular study question. In addition, many of the students were frustrated by the large number of unknown words in the data. Examined closely, three problems appeared as sources of the challenges. The first seems to be inadequacy in the training given to the students about how to conduct corpus searches effectively and efficiently. The second may have been a lack of more sophisticated search functions and capabilities in the existing corpus search engines and the need for more user-friendly search features. The third source of difficulty was the low level of English language proficiency or lack of vocabulary knowledge of some of the students. Yet another challenge was the lack of easy access to corpora, especially at the Chinese university, due to the limited number of computers with a corpus search program and Internet connection available to the students.

The challenges of corpus-based lexicogrammar learning are further evidenced by the fact that a few students indicated in the questionnaire that they did not feel they learned anything from the corpus searches or from their class as a whole. For example, 4 students answered "nothing," "none," or "having not learned anything," in responding to the question about what they considered the most useful and valuable things they had learned (Item 1); 11 gave similar negative responses to the question about what they had learned from their corpus searches (Item 3). Obviously, the corpus-based lexicogrammatical teaching did not seem to have helped these students in their learning. It is interesting to note, however, that almost all of these students came from the same three (out of the nine) classes that participated in the study. This fact would seem to suggest that their very negative feedback could be the result of class-specific negative learning experiences. In other words, class settings and instructors might be one variable influencing students' corpus learning. This issue will be addressed again later in discussing the Likert-Scale questions.

Useful Practices and Strategies

The study has yielded some useful practices and strategies for helping students succeed in corpus-based lexicogrammar learning or corpus-based language learning in general. First, a lot of modeling on corpus searches by instructors is crucial for students' success in their own corpus research. Many students and instructors talked about the need for such modeling based on both positive and negative experiences. When such modeling was lacking, students were found to experience great difficulty. However, although

modeling is extremely helpful, it alone is not enough for students to become competent and proficient corpus users. Hands-on experience or "learning by doing" seems to be equally important. As a student research group reported, in their corpus project that compared the use of "maybe" and "perhaps" in the spoken corpus versus the written corpus, they first included the sub-corpus of "fiction" as part of their written corpus. In their examination of the fiction data, however, they noticed that a substantial portion of the writing in fiction was actually dialogue, so they decided to exclude fiction from their written corpus — an informed decision based entirely on their own learning.

A second useful practice is to have students conduct search activities based on deductive learning before engaging them in inductive activities. The reason is that in deductive learning activities, the students are asked to test a lexicogrammatical rule or usage pattern that they have been taught or already know. In such an activity, all they need to do is to find examples to confirm or reject the rule or pattern. Such an activity is much easier than an inductive one in which students must go through many examples to identify a rule or pattern by themselves. Furthermore, students' success in deductive learning, as some instructors reported, would, in turn, give students more confidence in inductive searches, thereby enhancing their interest and motivation.

Another useful practice is to have students conduct group corpus research assignments in addition to or in lieu of individual ones. There are several advantages to having students work in groups in corpus searches. First, identifying lexicogrammatical rules or usage patterns is a very demanding task. A group is generally more capable than one individual of handling the job. Second, corpus searches are time-consuming, especially the task of going through the many tokens or examples a search usually generates. When several people share the work, it becomes easier. Third, in group work, students have the opportunity to learn from one another. The perceived advantages of group work are evidenced in one student's reflection on her corpus learning experience. She wrote, "When I was first introduced to corpus search, I found it overwhelming. There was so much to learn." After working with her group members on a search project successfully, however, her feelings changed: "I was pleasantly surprised to find that every member of our group possessed a unique talent that allowed him/her to shine in his particular field ... I actually enjoyed it [corpus research]." Of course, group work sometimes can be very difficult if there are problems with group chemistry or dynamics.

One other effective activity that can help students see the benefits of corpus use is to ask them to check their work on lexicogrammatical exercises against corpus data. There were many such exercises in the textbook used at the Chinese university, such as filling in blanks with appropriate verb particles and selecting the right synonyms. In the past, students found the exercises challenging and even frustrating because they often did not know whether their answers were correct. Now, by checking corpus data, they would often be able to figure out the right answers. Similarly, in the composition classes at the south-central U.S. university, the instructors marked their students' lexicogrammatical errors and then had the students work on the marked errors themselves by checking how the given lexicogrammtical items were used in the BNC. Most of the time, the students learned to correct their own errors this way.

Another practical point some of the instructors learned for corpus-based teaching is that corpus searches are much more useful for working on lexicogrammatical items that have multiple meanings or functions with high-frequency use than for working on items with a single meaning and low-frequency use. The reason is that an explanation or a check of the dictionary would usually suffice for students to grasp items in the latter category. For items in the former category, however, students need many good examples to learn to understand the various meanings and functions in different contexts. Finally, to help students conduct corpus searches more effectively and learn lexicogrammar more successfully, it is a good idea to let them use dictionaries so they can check for words they do not know in the corpus and to compare their corpus findings against dictionary descriptions. Many students and instructors spoke favorably of such a practice.

Findings from the Likert Overall Assessment Questions

The results from the Likert-Scale questions (summarized in Table 1), by and large, corroborate the aforementioned findings from the other data. Concerning Likert-Scale Question 1 (how helpful the use of corpora was in lexicogrammar learning), 15 participants (7.3%) selected "Very," 46 (22.3%) selected "Quite," 106 (51.5%) selected "Somewhat," 31 (15%) selected "Minimally," and 8 (3.9%) selected "Not at all." In other words, 80% of the participants found corpora use at least somewhat helpful, with 30% considering it quite or very helpful. Less than 4% viewed it as not helpful at all.

Table 1: Post-study assessment rating distribution

Rating	Question on helpfulness of corpus use	Question on amount of learning from corpus use	Question on plan to use corpora in the future	Question on relationship between grammar/ lexicon	Question on importance of context in grammar use
1	Not at all 8(3.9%)	Nothing 8(3.9%)	No 9(4.4%)	Not as close as 7(3.4%)	Not as important 10(4.9%)
2	Minimally 31(15%)	Minimal 18(8.7%)	Probably not 24(11.7%)	Not quite as close 34(16.5%)	Not quite as important 15(7.3%)
3	Somewhat 106(51.5%)	A little 100(48.5%)	Not sure 65(31.6%)	About the same 63(30.6%)	About the same 70(34%)
4	Quite 46(22.3%)	A good amount 75(36.4%)	Yes 90(43.7%)	Closer 81(39.3%)	More important 73(35.4%)
5	Very 15(7.3%)	A great deal 5(2.4%)	Yes, very much 18(8.7%)	Much closer 21(10.2%)	Much more important 38(18.4%)

Regarding Question 2 (how much they felt they learned from the use of corpora), 5 participants (2.4%) selected "A great deal," 75 (36.4%) selected "A good amount," 100 (48.5%) selected "A little," 18 (8.7%) selected "Minimal," and 8 (3.9%) selected "Nothing." Again, 87% believed they learned at least a little, with about 40% feeling they learned a good amount or a great deal. Less than 4% felt that they learned nothing. For Question 3 (whether they would use corpora in their future learning and teaching), 18 participants (8.7%) chose "Yes, very much," 90 (43.7%) chose "Yes," 65 (31.6%) chose "Not sure," 24 (11.7%) chose "Probably not," and 9 (4.4%) chose "No." Although a majority (52.4%) of the participants said yes, the overall response to the question could not be construed as very positive because only slightly more than 30% were not sure they would use corpora again, and about 15% said they would not use them at all. An informal interview of some participants about their answers to the question indicates two main reasons for the uncertainty and unwillingness expressed by some of the participants. First, as discussed in the section on the challenges of using corpora, concerns the amount of time and the effort that corpus analyses demand. The second reason relates to the relative lack of

access to corpora.

With respect to Question 4 (the comparison of their previous and current views on how closely grammar and vocabulary are connected), 21 participants (10.2%) selected "Much closer," 81 (39.3%) selected "Closer," 63 (30.6%) selected "About the same," 34 (16.5%) selected "Not quite as close," and 7 (3.4%) selected "Not as close." In other words, 50% now consider the relationship between the two closer or much closer than earlier. Just over 30% hold the same view as earlier, and 20% now view it as not quite as close or not as close.

The results are rather intriguing but simultaneously unsurprising. As indicated in the literature review, scholars (like the participants in this study) differ in their views on the relationship between grammar and lexicon, with one camp viewing them as two inherently connected parts of one entity and the other seeing them as two different domains. For Question 5 (in comparison with their previous view, what their current assessment of the importance of context in language use was), 38 participants (18.4%) responded "Much more important," 73 (35.4%) responded "More important," 70 (34%) responded "About the same," 15 (7.3%) responded "Not quite as important," and 10 (4.9%) responded "Not as important." It is safe to say that the use of corpora and lexicogrammar did appear to enhance the majority of the participants' understanding of the importance of context in language use because 54% of the participants now consider it more important than they previously thought. Only 12% thought it less important. Furthermore, of the 34% who held the same view as before the study, some did not change their view because they likely had understood the importance of context even before the study. In fact, quite a few participants stated as much in answering Item 8 in the open-ended question section, a question similar in nature to Question 5 on the Likert-Scale section (see Appendix).

Factors that May Influence Learner Experience in Corpus-Based Lexicogrammar Learning

To ascertain whether the learning environment affected the participants' learning experience and assessment, a *t*-test was conducted on the EFL and ESL group's total mean ratings of the five Likert-Scale questions combined. The reason for looking at the combined mean instead of the means of the five questions individually is as follows. The five Likert-Scale questions were all related (i.e., all about the effectiveness of some aspects of the corpus-

based teaching approach), and they all used the same rating scale (1–5), with 5 indicating the most positive and 1 showing the least positive assessment. A look at the overall mean allows us to obtain basically the same assessment information by looking at only one single dependable variable instead of five related ones, and it leaves out some unnecessary statistical information and saves discussion space. This, in turn, allows us to examine and discuss a few other factors (in addition to learning environment) that could have influenced the participants' learning experience.

The results of the *t*-test (reported in Table 2 with the effect size) indicate that the ESL total mean rating is significantly higher than that of the EFL. There are three likely reasons for the more positive responses in the ESL setting. First, the students in the ESL setting had better access to corpora. Second, their classes were generally smaller, which would likely mean more individual attention from the teacher and more interactive learning opportunities. Third, one of the ESL classes was part of a master's course in which students possessed higher English proficiency, appeared more motivated (as they showed better class attendance and participation and had a better rate of completion of the surveys than the undergraduate ESL students), and gave a higher overall assessment. In other words, the latter class's assessment helped elevate the ESL setting's overall mean rating and, as a result, might have been a confounding factor for the comparison between the two settings. Regardless of whether there was a significant difference between the EFL and ESL students' evaluations of the approach, there are obviously some important differences between EFL and ESL settings in general. In addition to variations in corpus accessibility and class size, the two settings also differ in their language environment and teachers' experiences and backgrounds. Whereas EFL students have little exposure to target language outside of class, ample target language input is available in the ESL setting. Whereas most of the teachers in ESL are native speakers of English, the majority of EFL teachers are nonnative speakers.

Table 2: Post-study overall assessment by setting

EFL (*N=152*)		ESL (*N=54*)		Both (*N=206*)		*T*-Test Results			
M	*SD*	*SD*	*M*	*M*	*SD*	*Mean Difference*	*T*	*P*	*D* (effect size)
3.26	0.59	0.8	3.57	3.34	0.67	0.31	2.527	0.01	0.43

Some of the characteristics of the EFL setting (e.g., lack of access to good quality corpora and large class size) pose special challenges in the implementation of the corpus-based approach, and others (e.g., lack of adequate target language input) point to the unique value of the approach because corpora offer EFL learners a source of authentic language data not available otherwise, a point commented on by many participants in the EFL setting in this study. Thus, how best to deal with the special challenge of making corpus-based learning more effective in EFL is a very important question for EFL teachers.

Based on findings from this study and previous research, there are several things that teachers can do. First, in dealing with the issue of lack of good access to corpora, a teacher sometimes can print out concordance lines about a lexicogrammatical issue he or she wants to talk about in class and give each student a hardcopy. In this way, students will have access to the data and be able to work on the problems in or out of class. Second, to help students in a large class become more engaged, small group work may be used because small group activities give students more opportunities to participate and interact with one another. In fact, as mentioned earlier, the findings of this study show that students generally prefer group corpus projects over individual ones. Third, most EFL teachers are nonnative speakers and they are often not quite sure about some lexicogrammatical usage rules and patterns because, as research has shown, nonnative-speaker teachers often do not feel confident enough about their own language abilities (Liu, 1998; Llurda, 2005). It is therefore a sensible practice for these teachers to thoroughly prepare before each class. We are not suggesting here that native-speaker teachers do not need to prepare well; rather, nonnative-speaker teachers may need to spend more time and make more detailed preparations by doing any necessary corpus searches before class on the lexicogrammatical points to be taught so they will not be caught off guard. In fact, the process of conducting such corpus analyses also gives these teachers an extra opportunity for language study, which will, in turn, further enhance their own language skills, something many nonnative-speaker teachers desire.

In addition to comparing the two settings' responses, we ran an ANOVA to check whether there was a significant difference among the different classes. The results indicate a significant difference (see Table 3); a post hoc Tukey's test (shown by subscripted letters attached to the class means) reveals where the differences lie (i.e., between which groups).

Table 3: Students' overall assessment by class

Class	Content/Skill	*M*	*SD*	ANOVA			
				df	*F*	*Sig*	*R* (effect size)
EFL 1 (*N=27*)	Overall	$3.04_{a,b}$	0.62				
EFL 2 (*N=26*)	Overall	$3.67_{b,c}$	0.42				
EFL 3 (*N=36*)	Overall	$3.21_{a,b}$	0.55				
EFL 4 (*N=35*)	Overall	$3.27_{a,b}$	0.59				
EFL 5 (*N=24*)	Overall	$3.08_{a,b}$	0.56	8/189	10.64	0.000	0.31
ESL 1 (*N=10*)	Composition	$3.16_{a,b}$	0.70				
ESL 2 (*N=12*)	Composition	2.75_{a}	0.79				
ESL 3 (*N=24*)	Grammar	4.14_{c}	0.48				
ESL 4 (*N=4*)	Read/Grammar	$3.65_{b,c}$	0.57				

Note: Means (*M*) sharing a common subscript are not significantly different by Tukey's test where $p<0.05$.

A quick look at the results shows that four of the classes stood out, with three (EFL 2, ESL 3, and ESL 4) having noticeably higher means and one (ESL 2) showing a markedly lower mean. Of the three classes with the highest means, two (ESL 3 and 4) were grammar or grammar/reading classes, and the one with the lowest mean was a composition class. This would suggest that the language content or skill being focused on might have been a factor influencing the students' experience.

To test whether that was the case, we did an ANOVA on the students' mean ratings grouped by the three major language skills the classes respectively focused on: (a) composition (two classes with 22 students), (b) overall skills (the five EFL classes with 148 students), and (c) grammar and reading/grammar (two classes with 28 students). The results of the ANOVA and a post hoc Tukey's test (reported in Table 4) indicate that the grammar group's mean rating is significantly higher than that of the other two groups, and the overall skill group's mean rating is much higher — although not significantly — than that of the composition group. Such a finding would suggest that the language skill focus of a class was a likely factor affecting the effectiveness of the corpus-based teaching approach.

Table 4: Student assessment by course content groups

Content Group	*M*	*SD*	ANOVA			
			df	*F*	*Sig*	*R* (effect size)
Composition (n=22)	2.94_a	0.76				
Overall Skill (n=148)	3.25_a	0.59	2/195	27.33	0.000	0.22
Reading/Grammar (n=28)	4.07_b	0.51				

Going back to Table 3, we will see that there is also a significant difference in the assessment mean among classes with the same language skill focus, as with the five EFL classes, for example. These EFL classes used the same textbook, syllabus, and facility, and the students were all second-year English majors with basically the same language proficiency. Obviously, there must have been other factors causing the significant difference among these classes, such as the teachers and students themselves. Scrutiny of the instructors' responses to the Likert-Scale questions against their own students' seems to show a correlation between the two. The students whose teachers' ratings were high also responded more positively on the Likert-Scale questions than those whose teachers' ratings were low. We also found the instructors' ratings generally reflected their attitudes and views about the corpus-based teaching approach during the semester. The teachers whose Likert ratings were high also showed a high level of enthusiasm and very positive views about the approach in their teaching practice, journals, and the instructors' meetings. It seemed sensible, therefore, to ascertain whether the instructors' attitudes indeed had an impact on their students' learning experiences and assessments of the teaching approach. We classified the instructors into three groups based on their Likert mean ratings: "Not very positive" (with a mean of 3 or lower), "Median positive" (with a mean between 3.1 and 3.99), and "High positive" (with a mean above 4). Two instructors fell into the low-positive-attitude group, 4 in the middle, and 2 in the high group. Then we ran an ANOVA on their students' mean ratings. The test with a post hoc Tukey's test (results reported in Table 5) reveals that the high-group students' mean rating is significantly higher than those of the other two groups, and the mean of the middle group is higher — although not significantly — than that of the low group. The results appear to suggest that the instructors' attitudes likely had an influence on the students' learning experience.

Table 5: Student assessment by groups based on instructor attitude

Group by Instructors' Attitude	*M*	*SD*	ANOVA			
			df	*F*	*Sig*	*R* (effect size)
Low (n+39)	2.96_a	0.68				
Middle (109)	3.21_a	0.58	2/195	33.65	0.000	0.26
High (50)	3.90_b	0.51				

Of course, the students themselves could have been an important factor in determining the effectiveness of the approach. In fact, the wide distribution of the students' answers on the Likert-Scale questions shown in Table 1 may serve as evidence of this point. On every single question, there were always a few students who selected the lowest rating (i.e., 1) and a few who chose the highest (i.e., 5). Based on the participating instructors' observations, students who were usually more motivated responded to corpus use more positively than those who were often less motivated. Those who usually enjoyed discovery learning also appeared to like corpus searches better than those who preferred deductive learning. Such observations are also supported indirectly by the students' survey responses to the open-ended questions. Like their responses to the Likert-Scale questions, students' responses to the open-ended questions also varied substantially, with some hailing the use of corpora as an excellent weapon for conquering their language learning problems and a few considering it a confusing and time-consuming program of little value. Typically, those who responded very positively about corpus use talked about how they enjoyed discovering rules and patterns themselves from their corpus searches. Several of those who stated they learned nothing from corpus searches, however, complained that the search results did not show or tell them anything. The latter's complaints could have resulted either from their difficulty in seeing patterns or from their unwillingness to take the time needed to analyze their data.

CONCLUSION

This study has shown that the use of corpora and lexicogrammar can enhance students' language awareness, improve their command of lexicogrammatical rules and usage patterns, increase their appreciation of context in language use and their critical understanding of grammar, and

promote discovery learning, thus making learning more effective. The results of the study also have revealed challenges of corpus-based lexicogrammar learning, such as the daunting difficulty many students experience in sorting through large amounts of data to identify lexicogrammar rules and usage patterns, the large number of unknown words and the complexity of language found in some corpus data, the limited functions and capacity of corpus search engines, lack of access to corpora experienced by some learners, and low level of motivation shown by some learners in engaging in discovery learning. However, the findings also indicate that some effective practices and strategies can be used to overcome such challenges; for example, more modeling and group work may enhance student success and ability in conducting corpus searches, reducing the difficulty corpus data analysis presents. Finally, the study has uncovered some variables that may affect learners' experiences in corpus-based grammar learning, such as learning environment, the language skills being learned, instructors' and students' attitudes and motivation, and students' learning styles and level of language proficiency.

Pedagogical implications

Based on our research findings, language educators need to be fully aware of the challenges and variables in using corpora for lexicogrammar learning and should take them into consideration in designing and teaching corpus-based curricula. They will need to decide whether or not and to what extent they want to incorporate corpus-based learning according to their students' learning objectives, language proficiency level, and so on. In addition, they should strive to lessen their students' difficulty in corpus use by modeling and conducting well-designed training. Of course, some of the challenges highlighted in the study, such as the limited functions of search engines, will require advancement in technology. Still, teachers can make valuable suggestions for improvement in this area based on their students' and their own experience in corpus research. In fact, some progress has been made in this regard. For example, regarding the problem of too many difficult words in the corpus data for learners, Wible, Chien, Kuo, & Wang (2002) have developed a software program "Lexical Difficulty Filter" that can filter out examples that contain difficult words. Of course, more work in this area is needed.

Limitations and Research Implications

This study has several limitations. First, there was a large difference in the number of subjects between the two settings; also the classes in the

U.S. did not quite match those in China with respect to the content and language skills taught. Second, due to limited resources and other factors, no formal face-to-face interview was conducted with the students or teachers, denying us the opportunity to gain some more in-depth understanding of some of the issues studied here. Third, the study did not employ language tests to measure, in quantitative terms, students' language learning achievement. Therefore, it lacked a truly objective gauge of students' learning gains. For future research, several lines of inquiry are helpful. One is more content- and language skill-specific research on the use of corpora to help determine its effectiveness in various specific language skill areas, such as lexicogrammar skills in reading or writing. Another is quasi-experiment research using language tests to more accurately measure the effect of the use of corpora and lexicogrammar on students' language learning.

Notes

1. Colligational patterns refer to the grammatical environment(s) or structure(s) in which a lexical item is typically used. For example, the verb "situate" is used mostly in the passive voice form. As another example, whereas "surprising," "astonishing," and "shocking" are all common in the affirmative sentence structure "It's surprising/astonishing/shocking," only "surprising" is usually used in the negative structure "It is not surprising." We seldom say "It's not astonishing/shocking."
2. Created for English language learning and teaching, the BNC Baby is a subset or condensed version of BNC. It contains four million-word samples from the BNC and consists of four sub corpora: 1) spoken, 2) academic writing, 3) written fiction, and 4) newspapers.

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APPENDIX: POST-STUDY QUESTIONNAIRE

I. Open-Ended Questions *(questions 11–13 were on the teacher version only)*

1. What are the most useful and valuable things you have learned in the course?
2. What corpus search activities have you done and for what type of information?
3. What have you learned from the corpus searches that you and your class have done?
4. In learning what aspects of language have you found the use of corpora most helpful?
5. What do you think are the greatest challenge(s) in the use of corpora for English learning?
6. What types of searches would you like to do more in the future for English learning?
7. Based on your learning this semester, what do you think is the relationship between grammar and vocabulary (entirely different or closely related) and why?
8. Based on your learning this semester, what do you think is the role of context in our choice of words and grammatical structure in language use?
9. Traditional grammar (especially prescriptive grammar) views grammar as rigid rules that native speakers of the language follow. Have your corpus research findings challenged this view? By the same token, have your corpus findings changed your view about grammar? If yes, then how?
10. Besides what you have been provided, what additional help and resources would you like to have in the future in order to use corpora and contextualized lexico-grammar more effectively for English learning?
11. In what ways do you find corpora useful for you as an ESL/EFL teacher?
12. What are the challenges you have found in incorporating corpus-based lexicogrammar in your teaching?
13. What have you done in assessing your students' learning of lexicogrammar?

II. Likert Questions

1) How helpful has the use of corpora been for your learning?
   1. Not at all. 2. Minimally. 3. Somewhat.
   4. Quite. 5. Very.
2) How much have you learned from the use of corpora?
   1. Nothing. 2. Minimal. 3. A little.
   4. A good amount. 5. A great deal.
3) Would you like to include the use of corpora for your future English learning?
   1. Not at all. 2. Probably not. 3. Not sure.
   4. Yes. 5. Yes, very much.

4) Compared with your previous understanding (i.e., before the course), what is your current view about the **relationship between vocabulary and grammar** (i.e., how closely they are connected)?
   1. Not as close. 2. Not quite as close. 3. About the same.
   4. Closer. 5. Much closer.
5) Compared with your previous understanding (i.e., before the course), what is your current view about the **importance of context** in determining language users' choice of words/grammar?
   1. Not as important. 2. Not quite as important.
   3. About the same. 4. More important.
   5. Much more important.

Chapter 6

Making Grammar Instruction More Empowering: An Exploratory Case Study of Corpus Use in the Learning/ Teaching of Grammar

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INTRODUCTION

Despite years of debate, grammar teaching (including questions of whether grammar should be taught, which grammar to teach, and how it should be taught) has remained a contentious issue, and there has not been much change in the way grammar is taught in college English classes (Curzan, 2009; Micciche, 2004). While some have argued for and embraced the teaching of usage-based descriptive grammar and a critical examination of grammar, many instructors still use a remedial approach focusing on teaching and enforcing prescriptive grammatical rules in the form of *don'ts*, such as *Don't end sentences with prepositions* and *Don't begin sentences with "and/but"* (Curzan, 2009; Kolln & Gray, 2009; Micciche, 2004). According to Micciche (2004), current grammar instruction in college writing classes is in general "not empowering but disempowering, not rhetorical but decontextualized, not progressive but remedial" (p.718). Such disempowering and remedial teaching of grammar does students more disservice than service. It not only makes grammar learning passive and uninteresting but also undermines students' ability to develop a clear understanding of context-appropriate use of grammar. For example, the teaching and the strict enforcement of certain prescriptive grammatical rules, such as the "no sentence-initial use of *and/but*" rule, have caused some students to religiously follow these rules regardless of context. Such teaching practices also make students less willing to allow grammatical

choices that, according to Kolln & Gray (2009), are not only available but also necessary for effective communication. Furthermore, the teaching practice discourages and stifles the development of critical understanding of grammar and language use in general, an understanding that some scholars (e.g., Curzan, 2009; Micciche, 2004) believe college students should possess.

The above discussion about current grammar teaching indicates a clear need for college English educators involved in grammar instruction to strive for more appropriate and effective teaching approaches to help students enhance their critical understanding of context and audience-appropriate use of grammar. In fact, many have pointed out the need and joined the endeavor (Curzan, 2009; Kolln & Gray, 2009; Micciche, 2004; Pharr & Buscemi, 2005; Weaver, 1996). More effort is needed, however. To this end, this study aims to explore the use of corpora in problem-based learning and teaching of grammar in a mainstream[1] college English grammar course. The exploration will focus on 1) students' responses to such a teaching approach and 2) the effects of the approach both on students' critical understanding of context-appropriate use of lexicogrammar and on their appreciation of nuances in lexicogrammatical usages, an area of knowledge essential for effective and precise communication.

LITERATURE REVIEW: THEORETICAL FRAMEWORK FOR THE APPROACH

The following review of the literature on corpus use and on PBL is intended to provide the theoretical framework for the proposed pedagogy. It should also help the reader understand how a pedagogy grounded in such a theoretical framework may enable students to learn grammar more actively and meaningfully, enhance their critical understanding of appropriate use of English grammar, and raise their awareness of the grammar knowledge they already possess but are often unconscious of. In other words, the review should indicate how such an approach may help make grammar instruction more empowering, contextualized, and progressive.

Corpus Use in Language Research and Learning/Teaching

A corpus is a collection of linguistic data, spoken and/or written, compiled primarily for the purpose of research although, in the past decade, corpora have also been used for language learning/teaching,

especially foreign/second-language learning/teaching. While most corpus data are composed of natural language, such as real conversations and newspaper articles, some are not, e.g., movie scripts and language produced in tests for assessment purposes. Most corpora today are computerized. Some can be accessed free online, such as the 400 million-word Corpus of Contemporary American English (COCA), the 100 million-word *Time* (magazine) Corpus, and the 100 million-word British National Corpus (BNC)[2]. Computerized corpora allow instant automatic searching and sorting of enormous amounts of language data in various manners, making language analysis much easier, faster, and more valid and reliable than before. For example, using the method known as "concordancing," one can query a corpus for any lexical item's (either a single-word's or a multi-word item's) overall frequency, its collocation patterns (i.e., with what other words it typically co-occurs, often as fairly-fixed idiomatic expressions, e.g., *make a decision* but *take a step*), and its frequency across various registers, such as academic writing, conversation, and written news, if the corpus consists of register-specific[3] sub-corpora. A concordancing search typically generates and displays on the computer screen not only the total frequency number but also the tokens[4] of the linguistic item being queried in a list of lines as shown in Figure 1, which displays part of the result of the query for the phrase "back on track" in the *Time* corpus.

The researcher or the teacher/student doing the search can read the concordance lines to examine the immediate linguistic context of the item being queried to gain a better understanding of its meaning and usage patterns. With many corpora, one can access even more extended context of the linguistic item via additional searches, e.g., here in the *Time* corpus, as well as COCA and the BNC, one can simply click the concordance line number/title to access more extended context including information about the source of the text. In some corpora, one can even access the entire text in which the queried item appears, including the name of the author/speaker of the text and the time and place where it was published or spoken. Thus, corpora may enable us to study language use in context although, as already stated, the extent of the context available may vary from corpus to corpus. In some cases, contextual information regarding audience, purpose, and intertextual relationships is unavailable. It is also important to note that some corpora contain language data from different historical periods and, as such, they are excellent sources for diachronic studies of language use. For example, the *Time* corpus contains all of

Figure 1: Query results for *back on track* in the *Time* Corpus

	CONTEXT	TOT	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
	BACK ON TRACK	58						3	12	23	20
CLICK ON TITLE FOR MORE CONTEXT											
1	1977/02/07	mixed. Liberals praised it as the first step in getting the economy **back on track**, while businessmen, labor leaders and some economists called the package									
2	1979/11/05	U.S. Negotiator Robert Strauss, who is eager to get the autonomy talks **back on track**. At week's end Strauss reported that there had been some progress in the									
3	1979/04/23	he used it, with McDonald's help, to get the negotiations **back on track**. # # The agreement calls for the industrial nations to cut tariffs on thousands									
4	1980/11/24	Begin for a side trip to Washington to try to get the talks **back on track**. At the time, the Administration hoped to set up some time in January									
5	1984/04/23	he had won his big victory in Pennsylvania. Now his life is **back on track**. His coat off, his shirt collar open to show the kind of white									
6	1984/12/03	, the Shultz-Gromyko meeting, with its explicit goal of getting arms control **back on track**, is the single most hopeful bit of progress in U.S.-Soviet relations since									
7	1986/11/24	income of $2.8 billion, down 30% from 1985. # To get **back on track**, GM will have to lighten its load considerably, and the company shows signs									
8	1987/03/09	seek help outside the White House as he attempts to get the presidency **back on track**. # While Baker's selection was widely popular, his name had not even									
9	1987/08/31	and released last week, Astronaut Sally Ride attempts to set the agency **back on track**. She argues for an " evolutionary " policy with diverse objectives, rather									
10	1987/12/14	officials have shied away from predicting when the program would get **back on track**, much less undertake new ventures. Though the shuttle's return to service is									
11	1988/02/08	last week with a plan for getting the stalled Middle East peace process **back on track**. The West Bank and Gaza uprisings, said Mubarak, had given special									
12	1988/03/25	is precisely as silly as real life. Never mind; Clancy is **back on track**. The reader is shown, in quick, effective takes of a few pages									
13	1989/09/04	process of piecing together the East bloc's first non-Communist government was **back on track**. # Extraordinary? Yes. Unexpected? Hardly. These days, events in									
14	1989/12/25	Church. # 66 # BUSINESS: Saatchi &. Saatchi struggles to get **back on track** # After its first annual loss in 19 years, the world's biggest advertising									
15	1989/12/25	959441 Chile's long democratic tradition was finally **back on track** last week after a 16-year hiatus. In the first presidential election since the bloody									

the magazine's publications since 1923. With data spanning over almost 90 years, it constitutes a good source for studying historical changes in American English, specifically in written American media English.

Thanks to their advanced capabilities, corpora have become a very useful source for language research and the learning and teaching of second or foreign languages, especially English as a Second or Foreign Language (ESL/EFL). In terms of research, many linguists and applied linguists have taken advantage of the various unique functions of corpora and produced valuable new understandings about language with some of them challenging existing English language descriptions (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Carter & McCarthy, 2006; Hunston & Francis, 2000). Biber, et al.'s (1999) and Carter & McCarthy's (2006) comprehensive corpus-based English grammar books are representative works in this regard.

A very important contribution of corpus-based language research is that it has provided evidence for the theory of "lexicogrammar." As part of the systemic functional theory of language advanced by Halliday (1994), lexicogrammar treats lexis and grammar as two inherently connected parts of one entity, challenging the traditional "wisdom of postulating separate domains of lexis and syntax" (Sinclair, 1991, p.104). In this view, "a grammatical structure may be lexically restricted" (Francis, 1993, p.142) and, conversely, lexical items are often grammatical in nature, for the use of a lexical item often has grammatical implications (Conrad, 2000; Hunston & Francis, 2000). Different words often have unique patterns or rules in collocation (e.g., in the meaning of caretaking/educating a child/children, *raise/rear a child/children* typically collocate but **lift/elevate a child/children* do not), colligation (the grammatical environment or structures in which a word typically appears, e.g., of the synonyms *astonishing/shocking/surprising*, only *surprising* often appears in the negative structure "It's not surprising"), and semantics/pragmatics (the typical semantic/pragmatic implications/meanings a word carries, e.g., of the synonyms *actually/really/truly*, only *actually* is often used to imply a contradiction or correction of what has been stated or believed to be, as can be seen in the statement "He actually did it," which implies a contradiction to the belief or statement "He did not do it"); every word has its own grammar in these respects (Aston, 2001; Sinclair, 1991). Lexicogrammar, thus, covers not only traditional grammatical topics such as syntax and morphology (i.e., sentence and word formation rules) but also important lexical usage issues not considered within the purview of grammar traditionally. These lexical usage issues are important because they deal with one of the most fundamental aspects of language structure and usage: how words are actually used and patterned to convey meaning. It is important to note that this study adopted the concept of lexicogrammar and, therefore, the topics covered in the grammar course in this study included the aforementioned lexical issues.

With regard to corpus use in language teaching, many studies have shown that corpora can make ESL learning and teaching more interesting and effective (Aston, 2001; Conrad, 2000; Francis, 1993; Liu & Jiang, 2009; O'Keeffe, McCarthy, & Carter, 2007; Sinclair, 2004; Sun & Wang, 2003; Yoon & Hirvela, 2004). Classroom research has indicated that corpus use is especially helpful for learning lexicogrammatical usage rules and patterns. Via concordancing searches, language learners can obtain, observe, and analyze useful language data about the lexicogrammatical items they are

interested in and then discover and generalize these items' usage rules and patterns. Such corpus-based learning is very effective because it engages learners in active "discovery learning" (Aston, 2001, p.19). Furthermore, corpora are also very helpful for second-language students to learn register difference in the use of lexicogrammar, i.e., context-based variations in lexicogrammar use (Hunston, 2002; Liu & Jiang, 2009).

Given the aforementioned valuable uses of corpora found in second-language learning/teaching, it is rather surprising and unfortunate that there has not been much research about corpus use in mainstream English classes. I have found only three publications on such corpus use (Barker, McEnery, & Wilson, 1997; Sealey & Thompson, 2004, 2007) and they all deal with elementary and secondary school mainstream English classes in Britain. Furthermore, of the three studies, only the two by Sealey & Thompson were empirical, and they focused on the use of corpora to raise elementary school students' metalinguistic knowledge, such as the knowledge of the parts of speech. Barker, et al. (1997) discussed how corpora might be used to enhance mainstream English education in secondary schools. Thus, it is clear that more research on corpus use in mainstream English classes, especially at the college level, is needed, considering especially 1) the potential of corpus use to help determine what specific context-appropriate lexicogrammatical rules are and to promote active and discovery learning, and 2) the need, according to some scholars (Curzan, 2009; Micciche, 2004), to make grammar teaching more empowering, contextualized, and progressive, and to promote critical understanding of grammar. The discovery learning potential of corpora is especially important because active discovery learning has been a key component of many contemporary learning theories and approaches, including PBL, the approach which helps form the theoretical base for the present study.

PBL

Defined broadly, PBL is "an instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem" (Savery, 2006, p.9).While it can be traced to John Dewy in theory, PBL was first used thirty years ago as an instructional approach in teaching medical students at McMaster University in Canada (Barrows & Tamblyn, 1980). It has since been

employed successfully, however, in teaching various subjects and at all levels of school from elementary to tertiary (Duch, Groh, & Allen, 2001; Hmelo-Silver, 2004; Torp & Sage, 2002). The underlying theory of this approach is that learning is most effectively initiated and facilitated by posing and solving real-life problems that interest the learner because working on such problems makes learning meaningful and motivates learners. The major characteristics of PBL are: 1) the use of complex or "ill-structured" real-life problems for students to research, 2) the facilitating role, rather than the traditional instructional role, that the instructor plays, 3) the self-directing and self-regulating that the students exercise in their learning, and 4) the close collaboration the students do in groups in the problem-solving process (Duch, Groh, & Allen, 2001; Hmelo-Silver, 2004; Savery, 2006). The unique features of PBL make it especially appropriate for college teaching because, according to Duch, Groh, & Allen (2001, p.6), the approach "addresses directly many of the recommended and desirable outcomes of an undergraduate education," including development of critical-thinking and problem-solving skills.

If we recall the unique values of corpora in language study discussed above and consider the characteristics of PBL, it appears that corpora may be ideal for problem-based learning/teaching of grammar. As research has shown, corpora can provide students with many active discovery learning opportunities to explore lexicogrammatical issues. Furthermore, lexicogrammatical problems, especially those related to what constitute context-appropriate lexicogrammatical rules, are often messy or ill-structured and hence excellent for PBL. For example, where and when to use the passive voice is not a very simple question. Nor is it an easy question whether and when certain collective nouns, e.g., *jury* and *team*, should be treated as singular or plural. For these difficult questions, corpora are arguably the best place for students to find possible answers, not just because corpora contain useful information for answering these questions but also, and more importantly, because the process of searching for the answers in corpora is complex and challenging, a condition crucial for PBL. Furthermore, by having students do corpus research about lexicogrammar, we are not only involving them in active, discovery learning but also telling them they are language experts. English instructors should help students capitalize on this knowledge by making it conscious through active, discovery learning (Kolln & Gray, 2009).

METHODOLOGY

Participants

The participants were 41 students in two sections (section A with 18 and section B with 23 students) of an English grammar and usage course at a large public university in the Southeast of the U.S. The two sections were not from the same semester (as only one section of the course was offered each year) and were taught by two different instructors, with the author being one of them. The course was designed to help students gain an advanced understanding of English grammar and usage. It was a cross-listed course with both graduate and undergraduate students. Although it was open to all upper class undergraduate students and graduate students, the course was taken primarily by students majoring in English, communication studies, and education. Of the 41 students in the two classes, 23 were junior or senior English majors, 7 seniors in other majors such as communication studies, journalism, and anthropology, and 11 graduate students pursuing a degree in language teaching or communication studies.

Corpora Used

The major corpora used in the course were the three free online corpora mentioned in the "review of corpus use" section above: the BNC, COCA, and the *Time* corpus. In addition, the students were also told they could also use the following three online corpora: 1) the free Michigan Corpus of Academic Spoken English (MICASE), 2) Google or the Webcorp (a free web search engine that allows a person to search all the Internet sources/data for information needed, i.e., it treats the entire World Wide Web as a corpus), and 3) the online *Oxford English Dictionary*, which the students could access because of the university library's subscription to it. The reason for using the online *OED* as a corpus was that it contains 2.2 million searchable quotations (37 million words) of naturally occurring language, which, as research has indicated, can serve as a good and quite reliable corpus of English for studying the evolution of English lexicogrammatical items (Hoffmann, 2004). The online accessibility of all the corpora made it possible for students to conduct corpus research at any time and location convenient for them as long as a computer with Internet access was available.

Study Design and Procedures

Given the exploratory nature of the questions in this study, a case

study approach was adopted as the research method as it would allow the use of a variety of qualitative data for detailed in-depth analysis on the issues being explored. Regarding the procedures of the study[5], in the first few weeks of the course, the students were introduced to the aforementioned corpora, including how to use them to conduct various queries, and instructed in the use of queries to extract different types of language usage information. Sample corpus research questions, such as to what extent the prescriptive rule that the structure "none of" with a plural noun phrase must be used with a singular verb form (e.g. "None of the students was injured") was actually followed, were given so the students were able to practice corpus query methods in answering real grammar usage questions.

For their individual corpus projects, the students needed to work on a lexicogrammatical problem that they had questions about and were interested in and to write a report about the project. Immediately after the students completed their individual corpus research project, they were organized into groups of three or four to embark on a larger corpus research project, which could be complemented by another empirical study, such as a survey, if deemed necessary or helpful. In both the individual and group projects, the students selected their own research questions and decided how to search for the answers. The instructor served only as a tutor or facilitator, the typical role in PBL. Specifically, the instructor provided some technical advice and assistance about corpus searches and the feasibility of research topics; e.g., for some lexicogrammatical problems, such as regional or age-related usage variations, the corpora used in the study would not be able to provide answers because the data were not tagged to allow searches for such information. The inclusion of the group project was motivated by the PBL theory that collaboration is crucial in students' learning. Furthermore, corpus research often calls for a close examination of tokens manually to decide whether they are relevant[6] and/or what they mean but one person's judgment sometimes may not be reliable or correct. Discussion among group members can often enhance the reliability and accuracy of such decisions. In addition, corpus research can be very time-consuming, especially when the project requires manual scrutiny of tokens. Sharing the work among group members makes the task more manageable. As part of the group research project assignment, each group had to write a paper about their research including findings and present it to the class.

Data Collection and Analysis

The data used in this study include the following: 1) the individual corpus research project, 2) the group corpus research project together with a peer evaluation form filled out by each group member about the other group members' performances, 3) a reflection paper about corpus use and the course, and 4) a survey composed of an open-ended question section and a Likert question section (see Appendix of the survey). The survey was given on the last day of class but not all the students completed and returned it. The peer evaluations were collected when the students turned in their group research papers. The students all produced and submitted, for grading, an individual corpus research paper and a group paper (one for each group) as part of the course requirements. Yet based on the consent form they had signed, the students had the option of stopping participation at any time during the study if they chose to, including not submitting their papers as data; to honor this agreement, all the research papers were returned to the students after having been graded and the students were then asked to resubmit their papers as well as a reflection essay in electronic form as data for the study. Unfortunately, as in the case of the survey, not all students submitted their papers and/or a reflection essay. It is not entirely clear, though, whether their noncompliance was a result of a conscious decision to stop participating in the study or some other reasons such as simply being too busy. The number of items collected as data by category was as follows: 31 research papers (21 of 41 individual papers and 10 of 13 group projects), with 13 of them coming from section A and 18 from section B; 38 peer evaluations for the group project, with 17 from section A and 21 from section B; 15 reflection papers with 6 from section A and 9 from section B; and 27 surveys, with 11 from section A and 16 from section B. The consistently higher numbers of submissions from Section B are likely the result of the larger size of the section (23 vs. 18 in section A).

Except for a tabulation of the students' answers to the Likert questions, the data analysis involved essentially an interpretive scrutiny of all the qualitative data, employing a two-step method commonly used in qualitative data analysis in social science/education research to identify themes: 1) an "ocular scan," also known as "pawing," and 2) "cutting and sorting" of the data (Bernard, 2000; Ryan & Bernard, 2003). Specifically, in the pawing stage, I read multiple times through the data, including the students' research papers, reflection essays, and their responses to

the open-ended survey questions, and I marked up (i.e., highlighted) sections that seemed interesting or important. Then during the cutting and sorting phase, I perused the texts again, especially the marked sections, identified quotes or expressions that appeared important to the research questions and then arranged the quotes thematically. The labels for common themes (e.g., "critical understanding of lexicogrammatical usage issues," "appreciation for the context/register appropriate use of lexicogrammar," and "difficulties and challenges in corpus searches and corpus data analysis") emerged as I identified reoccurring issues and reflected on the relationship between quotes from the data and topics relevant and important to the research questions. For example, many students discussed how some traditional or prescriptive grammatical rules were not followed in the corpus data and how the findings led them to question the validity of such rules. As I grouped these discussions, I concluded that the label "critical understanding of lexicogrammatical usage issues" captured the linked themes of attention to grammar, more precisely lexicogrammatical usage, and students' emerging critical stance toward usage rules, their critical understanding. It is important to note that, in this two-step analysis process, I identified and recorded not just the positive but also all the negative responses about corpus use and about the course in general.

The data from the two sections were combined for analysis and reporting for two reasons. First, despite the fact that the two sections were taught by different instructors, the content and objectives were the same for both sections. Also, the author was responsible for the corpus research component for both sections, including teaching the use of corpora and answering technical questions about corpus use. In this sense, the author was in charge of perhaps the most important part of the study in both sections. Furthermore, acting primarily as a facilitator, the instructor's role in this approach was quite limited. Second and more importantly, as a case study, the data used were almost exclusively qualitative and the data analysis, as just stated, was fundamentally a descriptive synthesis of the students' response to and the effects of the corpus use; thus, a comparison between the two sections in this type of data analysis is perhaps neither especially meaningful nor easy. Nevertheless, the author is aware of the potential problems of the combined data analysis, such as the possibility of missing some important differences between the two sections caused by, among other things, instructor difference.

RESULTS AND DISCUSSION

This section is organized as follows. It begins with a description of the students' general responses to the use of corpora in the classes based on the results of the Likert survey questions and some qualitative data. Then it is followed by a detailed discussion of the results from the qualitative data. To avoid unnecessary repetition, the discussion will integrate the different types of qualitative data (i.e., research papers, reflection essays, and answers to open-ended survey questions) and will be organized according to the main themes identified. The section ends with a discussion of the challenges of corpus use.

General Responses to Use of Corpora in the Classes

The results of the Likert-Scale questions (summarized in Table 1) show that the majority of the students responded positively or very positively to the questions. Specifically, 70% or more of the 27 students who returned the survey found the use of corpus quite helpful or very helpful (Question 1), believed they had learned a good amount or a great deal (Question 2), planned to use corpora in the future (Question 3), and considered context more or much more important in language use than before the study (Question 4). Of course, it is also important to note that two students found corpus use to be minimally useful and believed they had learned minimally from corpus research. Furthermore, eight students (nearly 30%) expressed some degree of skepticism about future use of corpora.

Table 1: Summary of students' responses to Likert-Scale questions

Rating	1	2	3	4	5
Question 1 on helpfulness of corpus use	Not at all 0(0%)	Minimally 2(7.4%)	Somewhat 6(22.2%)	Quite 12(44.4%)	Very 7(25.9%)
Question 2 on amount of learning from corpus use	Nothing 0(0%)	Minimal 2(7.7%)	A little 6(22.2%)	A good amount 13(48.1%)	A great deal 6(22.2%)
Question 3 on plan to use corpora in the future	No 1(3.7%)	Probably not 1(3.7%)	Not sure 6(22.2%)	Yes 13(48.1%)	Yes, very much 6(22.2)

(continued)

Rating	1	2	3	4	5
Question 4 on importance of context compared to previous belief	Not as important 0(0%)	Not quite as important 0(0%)	About the same 7(25.9%)	More important 12(44.4%)	Much more important 8(29.6%)

Because the question did not ask the students why they answered the way they did and because it was not feasible to conduct a follow up interview, we can only speculate about the likely reasons for their decision not to use corpora or their uncertainty about the issue, based on the students' responses to the open-ended question about the challenges in using corpora (Question 6). To avoid repetition, I will explore the reasons below in the section on "challenges."

Like their responses to the Likert survey questions, the students' direct and indirect responses to corpus use in the qualitative data were generally positive, although some students did mention, mostly in answers to the survey questions about the challenges in using corpora, concerns and difficulties they had with corpus research. Again, to avoid repetition, the concerns and difficulties will be discussed in the section on "challenges" below. A few examples of students' positive qualitative assessment of the use of corpora are provided here to offer a glimpse of students' general responses. The first example comes from a student's reflection paper:

> Being a "new" English graduate student ..., it was difficult for me to comprehend the idea of a corpus, much less how to use one. I never knew such a tool existed for the sake of academic research and have since found myself both troubled and amazed at the power of the research capabilities. Because of this type of research involving a corpus, I recognize now that I am a prescriptivist grammarian who accepted rules as rules simply because they were taught in such a way. Perhaps these rules even filtered over into my chosen field of study — journalism — because even in the case of the AP Stylebook, I have failed to question word usage or usage in practice. I simply accepted rules as rules. The course itself as well as the use of the corpus has forced me outside of my figurative prescriptivist boundaries and into an uncharted word-filled territory.
>
> The tool itself is incredibly valuable to the study of linguistics and the English language in general. If the course does nothing but encourage students to play with it, explore it, and be aware of it, it has accomplished a goal. It is certainly a facet of the structure of English that I was unaware of and feel as if I am a better student and future educator because of my newfound knowledge of it.

The student's comments suggest that she found corpora to be a very useful resource or tool for English study. Such an appreciation of corpora as a useful tool for research on lexicogrammatical usages can also be found in the following statement made by a student who conducted a corpus study on the issue of the use of sentence-final prepositions: "By using the British National Corpus and spending about two minutes doing light research with Google, my question about ending sentences with prepositions was answered in greater detail than I could have ever received using any one textbook or professor."

Some students appeared to appreciate particularly or mostly the value of corpus use in helping bring their implicit language knowledge to a conscious level. For example, in answering survey Question 1 about what he or she had learned from corpus research, a student wrote:

> Not so much learning as bringing to my attention. Strange word combinations and usage patterns have been interesting to take note of because up until this point I have never had reason to give it much thought.

In this student's view, what the corpus research in the course accomplished for him or her was "not so much learning as bringing to my [his or her] attention" language use issues he or she had never thought about. Bringing students' lexicogrammatical knowledge to consciousness has been identified as a crucial task for successful grammar teaching (Kolln & Gray, 2009). Corpus use appeared to be helpful in this regard. In addition to the above student's comment, the following statement by another student in response to the same survey question also supports the point:

> As a result [of the corpus research findings], I have begun to notice in my everyday life how people choose to use grammar, whether it be trendy or scholarly (underline added).

The phrase "begun to notice" suggests that it was only after his or her corpus research that the student began to become aware of the language issues he or she now notices.

Findings from the Qualitative Data by Themes

Before I embark on the findings from the qualitative data, a brief discussion about the topics of the students' corpus projects is necessary. As stated earlier, both the individual and group corpus research assignments asked the students to work on a topic they had questions about and were

interested in. The topics of their project fell into two major categories: 1) issues involving grammatical rules and usages which are a matter of debate and 2) changes of lexicogrammatical usages and meanings. Of course, some addressed both issues. Of the total 31 projects the students turned in, 22 were primarily of the first type, covering topics such as the use of split-infinitives, the issue of whether the "none of [plural noun/pronoun]"subject should be followed by a singular or plural verb, and the use of sentence-initial conjunctions like "and" and "but." The reason many of the students chose grammatical issues of debate was that typically these issues involved rules that the students had learned in school but were not always followed in actual language use. The nine projects that covered chiefly language change issues dealt with topics such as the frequency and use patterns of "whom" over the past century, neologisms in the 21st century, and the increasing use of "like" as a multi-functional word in contemporary English. Again, it is necessary to note that some of the projects on grammatical/usage issues of debate also involved a certain amount of diachronic analysis (i.e., whether the usage of the item in question had changed over time). Analysis of the qualitative data found four themes in students' use of, and reflections about, corpus study in these classes: 1) critical understanding about lexicogrammatical and broader language use issues, 2) awareness of the dynamic nature of language, 3) appreciation for the context/register-appropriate use of lexicogrammar, and 4) grasping of the nuances of lexicogrammatical usages.

Critical understanding about lexicogrammatical and broader language use issues

One example showing students' critical examination of lexicogrammatical use issues is found in a group research project that investigated the prescriptive grammatical rule, "Do not use conjunctions *and/but* sentential initially." The group wanted to determine to what extent this rule was actually followed. They searched for sentence initial uses of the two words in the *Time* corpus and the results revealed that such use was steady from the 1920s through 1960s but showed a noticeable decline in the late 1960s and the 1970s and then a steady and sharp increase from the 1980s. To find out what might have been the reason for the short-lived decline, the students examined various sources and learned that sentence initial use of *and/but* had actually been common since the 9th century and was not questioned until the 19th century when some prescriptive grammarians such as G. P. Quackenbos decided it was not acceptable (Burchfield, 1996; Rodgers, 1966). Despite the new rule, sentence initial use of the two conjunctions

has continued to be widespread except for that short-term decline due to a strong, but short-lived, push by prescriptive grammarians and school teachers to enforce the prescriptive rule. Based on their research findings, many of the group members appeared to have recognized the failings of prescriptive grammar and embraced a descriptive approach to grammar, a conclusion that may be gleaned from the following group project summary statement about their findings:

> While prescriptive grammarians may lament the fact that conjunctions are being used "improperly," descriptive grammarians can easily recognize the linguistic trends that are leading to a grammar shift metamorphosing the conjunctions *but* and *and* into linking adverbials.

In another example indicating critical understanding of grammar, one student who had been taught and had become a staunch follower of the rule that a comma has to be used after a sentence-initial transitional or linking adverb (e.g., *therefore* and *thus*) decided to do a corpus study on the issue after she noticed some of her friends did not follow the rule. She believed they were wrong. However, to her surprise, her research of the "Humanity/Arts" section of the Academic Writing register of the BNC yielded a slightly higher number of tokens with no comma after the linking adverbs so used. (She chose the "Humanities/Arts" section because she was an English major.) As a result, she concluded, "I discovered that my use of the comma after *therefore*, *thus*, and *hence* is not common. The data proves that more often it is used without the comma, but the data also proves that the issue is debatable." Yet the surprise was so strong that she wrote: "Now, my view of the no-exceptions grammar world is slowly splitting into non-coherent hemispheres." These comments seem to suggest that the corpus study made her question long-held rigid views about grammar. A similar effect may be seen in a student who did a corpus study about whether it was acceptable to say "*raise* a child/children." The reason he did the study was that his high school English teacher taught him not to say "*raise* a child" because, in the teacher's axiom, "You raise a window, but you rear a child." The results of his search of the BNC, COCA, and the *Time* corpus showed that *raise* has been used more often than *rear* since the 1920s. In fact, *rear* is used in this sense mostly in formal writing. More importantly, according to his search, *bring up* is actually the most frequently used verb form in expressing the idea. Based on the findings, the student concluded: "From the data, it [rear] appears to have never

been the dominant use in any context or time period ... the data begs the question of where the axiom that I along with others were taught originated. From what it appears, it was not more than an arbitrary line in the sand drawn to solve a synonymous verb question."

One more example on this issue comes from the student who conducted a corpus research regarding the rule of "Not ending sentences with a preposition" mentioned earlier. The student found many tokens of preposition-ending sentences and did not find any instances of sentences that were awkwardly constructed to avoid a sentence-ending preposition. The following is the student's conclusion about the research project:

> My biggest surprise of the project was that I did not find any overly complicated sentence rearrangements written to avoid ending a sentence with a preposition. As much as I heard from others that ending a sentence with a preposition was frowned upon, I very much expected to find some truly absurd-sounding sentences to avoid doing so, but I did not. For example, there is a scene in the movie *Beavis & Butt-Head Do America* (please excuse the example) where an FBI agent says "Isn't that the trailer they committed the crime in?" His superior chastises him for ending a sentence in a preposition. The agent attempts to rearrange his sentence, and we see him in the background struggling with the sentence, mumbling, "Um, is in this trailer which the crime ... no ... in which the crime this trailer ..." As much fun as it would have been to point out how silly it is that we would go to such lengths to avoid doing something that is technically not even incorrect, it was refreshing and reassuring when the corpus revealed that speakers of English have actually left this aspect of the language relatively uncomplicated.

These four examples illustrate the potential of corpus research to enhance students' critical understanding not only of lexicogrammatical usage issues, but of the difference between prescriptive rules and descriptive accounts of language.

Critical understanding of lexicogrammar also figures as a prominent theme in the students' answers to the open-ended survey questions. For example, in answering Question 1 about what they learned from their corpus research, 16 out of 27 students wrote that they found some established grammatical rules were often not followed in actual language use. One student wrote, "Even in written English, people often choose not to abide by perceived 'prescriptive rules.'" Similarly, in responding to Question 4 regarding their views about prescriptive grammar based on their corpus research findings, most of the students (23 out 25) who answered the

question stated that the findings did not support the traditional rigid view of grammar. The following quote from a students' answer to the question is a good representation of their responses in general:

> No, traditional grammar clearly failed to represent the dynamics and fluid nature of language. While I believe grammar courses should be a more common fixture in English education, prescriptive grammar is limited in its relevance, especially to spoken English (it is far more relevant to formal, written English, though). [Parenthetical comment is the student's own.]

Awareness of the dynamic nature of language use

One example of awareness of the dynamic nature of language use comes from a student who had loved to use the word "neat" to mean "interesting/fun/good," but often found her interlocutors were confused as they were not familiar with this use of the word. The problem led her to a study of the use of the word in the *OED* and the *Time* corpus. She was able to trace the development of the word's new meaning (the one she had been using) from its original meaning of "clean/organized" and to diagram the development of the new meaning. Interestingly, her research also showed a decline of the new use of the word in recent years, prompting her to conclude: "Finally, this use of 'neat' has begun to decrease so that it may one day become obsolete. For the future, it might be predicted that 'neat' will revert back to its original formal uses, as new trends of language are assumed ..." Similarly, another student who traced the development of the different usages and meanings of "like" in the *OED*, the *Time* corpus and COCA wrote:

> I did not expect to form so many opinions on the word "like"; or see this simple word and its attachments to other words form common phrases. This word has so many diversities, it is amazing. By diversity, I mean its capability to form so many expressions and different meanings. This one word that began as a common simile filtered itself into the American language as a space filler in our language and used in numerous ways, that were once seen as poor grammar and now go virtually unnoticed.

It is worth noticing that some students tried to tie the usage change they examined to specific sociopolitical reasons. One student traced the change of "re" to "er" (in words such as *theatre/theater* and *centre/center*) in American English by querying the *Time* corpus. Her research revealed that before the 1940s, the British spelling "re" was used almost

exclusively in *Time* magazine but since the early 1940s, April 7, 1941 to be exact, the American spelling "er" basically replaced "re" in the magazine. (There were still some uses of "re" after that date but her research showed that almost all of them were proper noun uses.) The student tried very hard to determine the reason for this sudden change. She noticed that back in 1806 Daniel Webster in his first Webster dictionary had already created the new "er" spelling but it was not followed in *Time* until 1941. Taking into consideration this was during World War II, the student hypothesized that the change could be a move to show American pride and patriotism.

It seems that these students' corpus research enabled them to see how lexicogrammatical usages and meanings are not fixed but dynamic, changing over time and geographical regions and even from individual to individual. In fact, 18 students in their responses to survey questions 1 and 2 mentioned how corpus analysis helped them understand diachronic and synchronic variations in lexicogrammar. One student wrote, "I also learned that language evolves and changes in spite of grammatical rules, as shown in the case of the use of conjunctions at the beginning of a sentence." Similarly, another stated, "It [corpus research] also gives historical/cultural insight from the 'decade breakdown'" [referring to the decade breakdown of data that the *Time* corpus is capable of exhibiting].

Interestingly, corpus research appears to have not only helped students become aware of dynamic changes and innovation in language use but also helped some students understand the systematic nature of language. A group's research project on English neologisms demonstrates this point. The students conducted a Webcorp search (as the Internet is believed to be a major new source of neologisms) of 30 recent neologisms (i.e., recently accepted into dictionaries) and 15 pending ones (i.e., not yet accepted into dictionaries). Their findings confirmed that successful neologisms generally follow established word formation rules, such as blending, compounding, acronymy, borrowing, and eponymy, and can stand the test of public acceptance and time. In other words, the research project allowed the group to see a blend of innovation and systematic use in the development of English lexicogrammar.

Appreciation of the context/register-appropriate use of lexicogrammar

One example showing students' appreciation of the context/register-appropriate use of lexicogrammar comes from a student who examined the issue of verb agreement with the "none of [plural noun/pronoun] subject."

The prescriptive grammatical rule is that the verb should be in the singular form because "none" indicates singular. The student's query of the BNC corpus showed that, in the spoken register, 78.9% of the relevant tokens used the plural verb form and only 21.1% used the singular form; in contrast, the opposite pattern was found in academic writing with 72.7% using the singular verb form and 27.3% the plural form. The findings led the student to conclude that "in academic fields people tend to follow the prescriptive grammatical rules whereas in spoken English people would not do so most of the time." In fact, most of the students' projects examined cross-register differences concerning the lexicogrammatical issue they investigated, and many commented on register variations. For example, one student scrutinized the usage patterns (especially frequencies in different registers) of *type of* vs. *sort of* in COCA and found that the contexts in which the two were used differed noticeably, thus concluding: "So *type of* seems like the better choice in a business or economic field of discourse, and *sort of* is more often applied to relationships, behaviors, and people."

The students' understanding of the context/register-appropriate use of lexicogrammar may also be seen in the students' answers to the open-ended survey questions. For example, in answering survey Question 1 about what they had learned, 11 out of 27 stated that they had learned noticeable differences in lexicogrammatical usage across registers and varieties of English. Some of these students (4) went on to say that they also found such variations, including some that appeared to violate traditional rules, were often necessary for effective communication. For example, a student who conducted a study of the use of "split infinitives" came to the conclusion that split infinitives were often an effective means to provide the necessary emphasis one wanted to convey (e.g., "to *fully* understand ..."). Also in responding to Question 2 regarding the areas of corpus use that were most helpful, 10 out of the 27 students stated they found corpora especially useful for exploring lexicogrammatical usage patterns across registers, such as certain transitional words and structures being used mostly in news media.

Most noticeably, on Question 3 concerning the role of context in language use, all the students' responses were centered around the crucial role of context in determining the lexicogrammatical choices people make. Many students used strong intensifiers or special expressions to emphasize the importance of context. One student stated, "Context is

king" and another claimed that "Context is everything." One student specifically mentioned that the use of corpora had helped him or her better appreciate the role of context: "I knew that context was important to lexicogrammatical choices, but corpus work has helped me gain a better understanding of the way context probabilistically affects choice."

Grasping of the nuances of lexicogrammatical usage patterns

The data indicated that corpus analysis might help students grasp the nuances of lexicogrammatical usage patterns. For example, a student studied the use of the tautological expression "actual fact" in COCA. While the general research finding was that it is a usage speakers employ for emphasis, his close reading of the corpus examples found a semantic difference between the use of "the actual fact" and "an actual fact," a point he explained as follows:

> Accompanied with an indefinite article, the phrase seems to be much less valid and compelling. For example, in fictional work, *Peeling*, a character states, "Don't want you thinking that way. But it might be an actual fact" (COCA). The use of "an actual fact" is accompanied in this sentence with "might," which specifies some sense of uncertainty. On the other hand, a report from NPR exclaims, "But the actual fact of working outside, of being outside in incredible cold and in incredible heat, I just found incredibly exhausting and draining." (COCA). This particular example of "the actual fact" as opposed to "an actual fact" offers a much more compelling argument to the audience.

As another example, a group of students examined the BNC and the *Time* corpus about semantic differences between prepositions "at," "in," and "on," especially the prepositions' uses in idiomatic expressions such as "in love" and "at peace." Based on their finding that "at peace" is typically used to describe an "emotional state" in fiction, they theorized the rationale for the use of "at" in the phrase this way:

> Peace clearly is not a point in space as the grammar books teach, but if we also look at this figuratively we can determine why the preposition "at" is used with this noun. If a person is "at peace" it generally means they had to go through times of unrest to get there. "At peace" usually comes after times of turmoil. If this is the case, peace is a sort of destination, and destination is something at which we arrive.

These examples demonstrate the students' working to tease out the nuances of language via corpus data analysis.

In responding to survey Question 2 about the areas where they found corpus use most helpful, 15 of the 27 students also expressed their appreciation of the usefulness of corpora in helping them identify nuances in lexicogrammatical usage patterns. One student wrote, "It [corpus use] really allows me to identify patterns of usage I never would have identified otherwise." Another student said that "corpora are designed to give us this type of information [nuances in usage patterns] and does a brilliant job in providing it." The understanding of lexicogrammar that the students appeared to have gained is perhaps best shown in the following comment a student made in the reflection essay regarding the problem of using corpora in examining less frequently used lexicogrammatical items: "Usages and meanings that are more rarely used but nevertheless commonly acceptable are harder to find in the wash of more common tokens, so it might provide a false understanding of specific usages." The fact that students were thinking about such important issues suggests that corpus use in this course might have helped increase students' critical-thinking and problem-solving skills around, and overall understanding of, language usage issues.

Finally, to end the discussion of the findings in the four themes, it is necessary to note the students' learning shown in the above examples appeared to come mainly from the process of solving the problems they investigated in their corpus research projects, a fact that may point to the value of corpus use in PBL-based grammar learning.

Challenges

The discussion in this section is based primarily on the students' responses to the open-ended questions on the survey, especially Question 6 that asked them specifically about the challenges they faced. Relevant comments from students' reflection essays will also be used. The students' responses to Question 6 appear to converge on two issues. The first concerns the difficulty involved in data analysis, including determining what query tokens were relevant and knowing how to interpret the results and identify usage rules. As one student wrote, the greatest challenge for him was "filtering through the concordance lines and finding meaningful data." A total of twenty-three students made comments on this challenge. Ten of these students also mentioned that the enormous amount of information that corpus queries often generate adds further to their difficulty in data screening and analysis. Another challenge, mentioned

by 17 students, was that they did not quite know which query method or methods were most useful or appropriate for finding answers to their research questions. These challenges in corpus use might have been the main reasons for the negative or not so positive responses to some of the Likert questions mentioned earlier. Students who experienced great difficulty in their corpus research were perhaps likely to feel that corpus use was not helpful and/or they learned little in corpus research.

The typical challenge the students experienced can perhaps be best seen in the following account described in the reflection paper written by the student who conducted her corpus research on the issue of whether a comma should be used after a sentence-initial linking adverb in the BNC:

> From the beginning, I thought this topic would be quite tedious because it would involve a lot of counting, but I did not realize how tiring it would be. After navigating the corpus in a few different manners, I could not discover a way to make my search limited to only those sentences that started with *therefore*. When I did a search, every use of *therefore* would come up no matter where it was placed in the sentence.
>
> Out of curiosity, I did not limit my first search but simply chose "Ignore" on both of the registers. Just as I suspected, there were too many hits to use for quick research. Since the 22, 983 hits were overwhelming, I decided to search under the "Academic" heading. While this search only had 8494 hits, the numbers still intimidated me, so I finally decided to research under the "Humanities and Arts" heading. Since most of my proofreading involves papers that are written for English classes, this search actually turned out to be the most useful.

While the student's description highlights the difficulties students can experience in corpus research, her final resolution after some time-consuming explorations also demonstrates that if students devote the time and are persistent, they can devise workable solutions. This fact may further indicate the potential of corpus use mixed with PBL-based learning. A related issue mentioned by nine students in the survey was that there were so many different query methods to learn that it would take a great amount of time to become familiar with them. Yet three of the nine acknowledged that, given time and practice, it should not really be an issue.

CONCLUSION

The results of the study have shown that corpus use may be helpful for

grammar teaching in English grammar and linguistics classes and perhaps also in writing classes. As illustrated by the four themes of the findings, corpus use (perhaps especially when combined with problem-based learning) may be able to help students develop critical understanding about lexicogrammatical and broader language use issues. According to Curzan (2009) and Micciche (2004), teaching critical understanding of grammar should be an important goal of grammar teaching in general because critical thinking is empowering. Because of the diachronic (across historical periods) and synchronic (cross-register) data available in many corpora, corpus use may also have the potential of enhancing students' awareness of the dynamic nature of lexicogrammatical and broader language use. For the same reason, corpus use may be able to help students increase their appreciation for the context/register-appropriate use of lexicogrammar. Finally, thanks to the unique ability of corpora in generating language usage patterns/rules that are otherwise difficult to identify, corpus use may assist students in grasping nuances of lexicogrammatical usages for effective communication. In short, corpus use may help make grammar teaching more empowering, contextualized, and progressive.

Based on the challenges of using corpora identified in this study, it is paramount for the instructor to provide students with adequate training on the use of corpus, especially the use of various query methods and the knowledge of which methods to use for the different types of problems being investigated. It is also important for the instructor to be an effective facilitator and to create a classroom environment and other conditions conducive to corpus study.

As this was an exploratory case study, the generalizability of these findings are uncertain. Given this fact and given that this study involved only college students in a grammar course, it would be interesting and useful in future research to conduct studies on corpus use in other types of college English classes such as writing courses and/or to carry out studies that would make use of other research designs, e.g., quasi-experimental studies with larger sample sizes or longitudinal studies that examine the long-term effect of corpus use on students' learning. It is the author's hope that the present study will generate more interest and research into the use of corpora or other approaches that will make our grammar teaching more effective and, above all, more empowering to our students, a goal that many in the field have advocated and one that we should all strive for.

Notes

1. "Mainstream English course" refers to one offered to the general student body, not to ESL students. The term "mainstream English course" is adopted instead of English course for native English speaking students because research (Canagarajah, 2006; Matsuda, 2006) has shown that the student population in today's mainstream classes in American colleges is so multilingual that the distinction between native/nonnative English speaking is problematic and inaccurate.
2. The first two are compiled by Professor Mark Davies of Brigham Young University and the latter was developed by the BNC Consortium, an industrial/academic consortium led by Oxford University Press, but all can be accessed via a web interface provided by Professor Davies.
3. A register is a variety of a language used for a particular purpose (e.g., legalese) or in a particular social setting (e.g., an informal setting such as a birthday party or a formal setting such as a commencement ceremony).
4. In a corpus, a linguistic item, e.g., a word such as "happy" or a phrase like "by and large," is called a "type" while each occurrence of it in the course is labeled a "token."
5. As part of the normal procedures for empirical research involving students, at the beginning of the course, the students were informed about the study and given a consent form to read and sign. The consent form explained to the students that participation was voluntary, their decision to participate or not would not affect their grade in the course, and they could stop participating at any time. The consent form also made clear what was involved in the study including what they would need to do.
6. Relevant tokens are those that are indeed what the researcher looks for in a corpus query. Sometimes, not all tokens that a concordance query generates are relevant. For example, if one types in "[go] on" to query for the frequency of the phrasal verb *go on* as in "Life *goes on*," the query may generate irrelevant tokens like "They often *go on* weekends" where *on* is a preposition for the adverbial phrase of time "on weekends" rather than an adverbial particle for the verb *go to* form the phrasal verb *go on*.

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APPENDIX: POST STUDY QUESTIONNAIRE

This survey aims to ascertain your assessment of your learning in the course, especially what you have learned from the use of corpus research, contextualization,

and lexicogrammar. The survey consists of two parts: 1) open-ended questions and 2) multiple-choice questions. Please answer all the questions in both parts. Thank you very much for completing this survey and for participating in the study.

Part I: Open-Ended Questions

In answering the following questions, please be as specific as possible and give examples to illustrate your point.

1. What are the most useful and valuable things you have learned in this course?
2. In learning which aspects of language (such as word meanings and lexicogrammatical usage patterns across registers and contexts,) have you found the use of corpora most helpful? Please give examples to support your answer.
3. Based on your learning this semester, what do you think is the role of context in our choice of lexicogrammatical items in language use?
4. Traditional (prescriptive) grammar views grammar as rather rigid rules that native speakers of the language follow. Do the findings of the corpus search projects generally support this view? By the same token, have your corpus findings changed your view about grammar? If yes, then how?
5. In this course, you have done both an individual corpus research project and a group research project. Which type do you like better and why?
6. What do you think are the greatest challenge(s) in the use of corpora for English learning and research?

Part II: Multiple-Choice Questions

Please answer the following questions by checking the answer that is closest to yours.

1) How helpful has the use of corpora been for you in your study in this course?
   1. Not at all. 2. Minimally. 3. Somewhat.
   4. Quite. 5. Very.
2) How much have you learned about English grammar and usage from the use of corpora?
   1. Nothing. 2. Minimal. 3. A little.
   4. A good amount. 5. A great deal.
3) Will you use corpora for your future English study?
   1. No. 2. Probably not. 3. Not sure.
   4. Yes. 5. Yes, very much.
4) Compared with your previous understanding (i.e., before the course), what is your current view about the **importance of context** in determining language users' choice of words/grammar?
   1. It is not as important as I previously thought.
   2. It is not quite as important as I previously thought.
   3. It is about the same as I previously thought.
   4. It is more important than I previously thought.
   5. It is much more important than I previously thought.

Chapter 7

Combining Cognitive and Corpus Linguistic Approaches in Language Research and Teaching: Theoretical Grounding, Practices, and Challenges

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INTRODUCTION

In the past two decades, Cognitive Linguistics (CGL) and Corpus Linguistics (CPL) have emerged as arguably the two most influential contemporary linguistic theories/approaches in the research on language use and language teaching,[1] as is evidenced by the plethora of informative studies in applied linguistics that have been based on one or the other (e.g., for CGL-based studies: Boers, 2000; Boers & Lindstromberg, 2008; Holme, 2009; Kövecses & Szabó, 1996; Pütz, Niemeier, & Dirven, 2001; Robinson & Ellis, 2008; Tyler, 2012; and for CPL-based studies: Aston, 2001; Biber, Conrad, & Reppen, 1998; Hunston & Francis, 1998, 2000; Liu, 2008a, 2008b, 2010a, 2010b, 2011a, 2011b, 2012; Liu & Espino, 2012; Liu & Jiang, 2009; Sinclair, 1991, 2004). However, there have not been many studies that combined the two linguistic approaches, likely because of the surface differences between CGL and CPL. Only a relatively small number of studies have purposefully integrated them (e.g., Gries & Divjak, 2009; Grondelaers, Geeraerts, & Speelman, 2007; Liu, 2010a, 2011c, 2013). Though not large in number, these studies have managed to show the values of and the potentials for combining CGL and CPL in language research and teaching. It is the purpose of this paper to introduce and promote this integrated approach. The paper first explores the theoretical grounds for combining the two linguistic approaches. Then, drawing on existing studies, including those of the author, the paper describes how

the two approaches can be combined to enhance the validity of language research and the effectiveness of language learning/teaching. The paper ends by discussing the challenges and future directions of employing such a combined approach.

THEORETICAL GROUNDS

To understand the theoretical grounds for combining CFL and CPL in language research and teaching, a basic overview of the two linguistic approaches is first in order.

Cognitive Linguistics

Unlike most traditional linguistic approaches — such as structural and generative linguistics, which treat language as an autonomous system by focusing on the formal (e.g., syntactical) aspects of language — CGL considers language an inherent part of the human conceptual system and focuses on meaning (including pragmatics) rather than the formal aspects of language. Specifically, CGL views language as a symbolic system composed of symbolic units (which are pairings of form and meaning) signifying human conceptualizations. Hence, CGL posits that linguistic forms or structures (including phonemes, morphemes, and syntax) are generally not arbitrary but motivated by our embodied experience and conceptualizations. For example, due to our embodied experience, we generally conceptualize *being up/high/bright/balanced* as being positive while *being down/low/dark/unbalanced* as being negative. These conceptualizations are ubiquitous in language, as evidenced by the following matched English/Chinese expressions: *high* vs. *low spirits/IQ/standard*, "*on cloud nine*" *(being extremely happy)* vs. "*down in the dumps*" *(being extremely sad/unhappy)*, *bright* vs. *dark future*, *balanced* vs. *unbalanced approach/ecology*; *高兴* vs. *低沉*, *高* vs. *低智商/水平*, *光明* vs. *黑暗的前途*, *平衡* vs. *不平衡的方法/生态*。

Grammatical structures are also often based on our embodied experience and hence are motivated rather than arbitrary. For instance, based on the human conceptualization that "more is stronger," repetitions are used for emphasis, e.g., "*It is really, really interesting*" and "*The work is very, very important.*" Also, due to the conceptualization that "the closer the two entities, the stronger the bond or transmission between the two if transmission is attempted," the following two closely-related sentences "*I taught him French*" and "*I taught French to him*" do not convey exactly the same

meaning. The former sentence implies "him" learned to grasp French, but the latter does not have this implication, thanks to the fact that the learner (N3) in the former sentence structure (N1+V+N3+N2) is closer to the agent/teacher (N1) than in the second sentence structure (N1+V+N2+to N3). As another example, because of our conceptualization of time as spatial — with the past tense/time perceived as being distant away from the present — English speakers use the past tense in the present situation (e.g., "*Could you give me some suggestions?*" and "Here are two suggestions *I thought you might like.*") to make their requests/suggestions sound less immediate/demanding (hence more polite).

It is important to note, however, that due to differences in cultural experience, linguistic structures and usages often vary from language to language. For example, as a language of a high-context culture where meaning is often derived from context rather than explicitly expressed, Chinese is not only a non-inflectional language, having no plural and tense inflections, but also a radical pro-drop language, boasting a very high frequency of subject/object deletion as shown in the following exchange: "喜欢不喜欢这本书 [Like the book or not]?" "喜欢 [like]." In contrast, as a language of a low-context culture where things often must be spelled out explicitly, English is an inflectional and non-pro-drop language. Also, in terms of usages, as this author's (Liu, 2002, 2007) studies show, due to historical and cultural reasons, eating-based idioms (e.g., 吃苦/吃亏/吃香/吃败战/吃醋/吃紧/吃透) figure much more prominently in Chinese than in American English, whereas sports-based idioms (e.g., *drop the ball/play hardball/strike out/throw a curve ball/touch base with*) are far more common in American English than in Chinese.

It is also worth noting that, in CGL, the concept of symbolic units (the basic structure in language) collapses the traditional rigid separation between lexis and grammar. Symbolic units cover a variety of linguistic elements, which range from morphemes (e.g., the past tense *ed*) to entire clauses (e.g., *How do you do?*). A symbolic unit or construction can be completely filled (e.g., the grammatical morpheme *ed* and the phrase *tie the knot*), partially-filled (e.g., the "the more ... the more ..." construction), or unfilled (e.g., the aforementioned ditransitive *N+V+N+N* "cause to receive" construction). Thus, symbolic units may vary in schematicity, with the unfilled schematic grammatical units being much more schematic than the filled and unfilled constructions. Yet, "all grammatical elements — morphemes, classes, and rules — are ... schematic symbolic

units" because they are "simply schematizations of particular expressions" (Langacker, 1991, p.46). A schematic construction enables speakers to quickly produce new utterances "in conformity with the specifications of the schema" (Taylor, 2002, p.233). However, constructional schemas do not function the way rules in generative linguistics do: they do not generate sentences. They simply provide models for speakers to follow.

For any linguistic element to become a construction, it has to be highly frequent so that it can be entrenched in a language user's linguistic system. Language knowledge is thus acquired via repeated exposure and use, i.e., it is usage-based, not innate as has been proposed by generative linguistics. The innate theory posits language mainly as a prewired autonomous system in the form of Universal Grammar (UG). This theory of language knowledge is based on an assumed paucity of language input and an assumed ease with which children acquire a language, but both assumptions have been seriously challenged in recent empirical research (see Tomasello, 2003). According to CGL research findings, language "is acquired 'bottom-up' on the basis of encounters with the language, from which schematic representations are abstracted" (Taylor, 2002, p.592). Furthermore, a large part of our linguistic knowledge is composed of "knowledge of low-level generalizations" and even "knowledge of specific expressions" (Taylor, 2002, p.592), a theory that contrasts sharply with the highly abstract generalizations that form the core of language knowledge in the generative linguistic theory. In short, in usage-based theory, "language is learned from input, using general cognitive mechanisms, sensitive to type and token frequency, resulting in item-specific knowledge and more abstract categories of form-meaning relationships" (Robinson & Ellis, 2008, p.494).

It is also important to note that, because CGL views language as a symbolic system representing human embodied conceptualizations, conceptual operations, such as construal and metaphor, are extremely important in language. Construal refers to how a speaker/writer construes an issue and expresses it. It significantly affects our use of lexical items and grammatical structures, such as the choice of prepositions, tense/aspect, and voice. For example, *went over an article* and *went through an article* may refer to the same activity but reflect different construals by the speaker. The utterance *I went over the article* accentuates the fact that the speaker read the entire article (likely quickly), whereas *I went through the article* focuses on the effortful process and detailed attention the speaker

paid in reading the article. As an example of the role of construal in the choice of voice, former President Clinton said in response to a reporter's question regarding whether he and his wife made mistakes in their firing of White House Travel Office employees, said, "Mistakes were made" instead of "We made mistakes." By changing the figure (a CGL term) of the utterance from the Clintons to mistakes — a re-construal — Clinton technically avoided admitting that they made mistakes. CGL's focus on construal, metaphor, and other conceptual operations offers us unique and interesting perspectives in our understanding of language.

Corpus Linguistics

On the surface, CPL differs from CGL in that while CGL focuses on the workings of the language in the mind (i.e., something internal), CPL deals mainly with language data (i.e., something external to the mind). Furthermore, whereas CGL is often known as a "non-objectivist" theory of language, CPL is famous for using mainly a quantitative (objectivist) approach to language (Grondelaers, Geeraerts, & Speelman, 2007, p.150). However, these surface differences are based largely on inaccurate assumptions. The fact that what CGL investigates is often subjective does not mean that the method used to study it must also be subjective (Grondelaers, Geeraerts, & Speelman, 2007). In fact, CGL theories have been built largely on empirical research findings (see, for example, Goldberg, 1995, 2006; Tomasello, 2003). Also, although CPL approaches language mainly in a quantitative manner, it inevitably involves hypothesis testing and interpretation of results — operations that are largely subjective in nature (Hanks, 1996; Liu, 2010b). Furthermore, as will be shown by the brief discussion of CPL below, CPL shares three commonalities with CGL: it is usage-based; it focuses on meaning; and it also rejects the traditional rigid separation of lexis and grammar as two distinct domains. Most significantly, CGL and CPL complement each other in a very important way: whereas CGL provides valuable theoretical guidance and insights for CPL in data analysis/interpretation, CPL offers CGL "the kind of data that are at the heart of Cognitive Linguistics" (Gries, 2008, p.412).

The usage-based nature of CPL is self-evident thanks to its data-driven approach to language based on authentic language data. CPL uses language frequency measures to identify usage patterns at all structural levels, ranging from individual words and their collocations/colligations to larger structures such as *collostructions* (a term Stefanowitsch & Gries coined

in 2003 by applying CGL's concept of *construction* in CPL) and sentence patterns shown in *pattern grammar*, a concept developed by Hunston & Francis (2000). As is the case in CGL where a linguistic item has to have a high frequency to become a *symbolic unit/construction*, a collostruction in CPL must also have "sufficient frequency of occurrence" (Gries, 2008, p.412). Also, just like CGL, which assumes that language consists mostly of symbolic units that are processed as whole units, CPL holds as one of its most famous findings that language is composed of many pre-/semi-prefabricated expressions whose meanings cannot be completely derived from their individual components. These pre/semi-fabricated expressions/constructions are essential in communication.

The meaning-centeredness of CPL can be best seen in the fact that the focus of the approach on language patterns is driven by both an interest in the relationship between form and meaning and a belief that formal distribution differences in language correspond to functional/semantic differences (Gries, 2008; Liu, 2010b; Liu & Espino, 2012; Sinclair, 1991). Many corpus studies have successfully demonstrated this relationship by showing how the distributional patterns of a linguistic form reflect its functions/meanings (Divjak & Gries, 2006; Liu, 2010a; Liu & Espino, 2012; Stefanowitsch & Gries, 2003). The examination of distribution/usage patterns of linguistic items enabled researchers to identify the unique meanings (especially connonational meanings or "semantic prosodies") of various linguistic constructions. For example, Stefanowitsch & Gries's (2003) corpus analysis has shown that the *N+(be)+waiting to happen* construction (as instantiated by *accident waiting to happen*) and the *v+into* causative construction (as instantiated by *trick/fool someone into doing something*) are used primarily in the negative sense. Semantic prosody patterning can also be found in other languages, e.g., in Chinese, whereas the "x造成了y" construction is generally negative, the "x造就了y" construction is typically positive. CPL's focus on pre-/semi-fabricated constructions and lexicogrammatical patterns highlights it as an approach that, like CGL, collapses the traditional boundaries between lexis and grammar.

In summary, both CGL and CPL are meaning-focused and usage-based, and they both reject the traditional rigid separation of lexis and grammar. Furthermore, the two approaches offer each other the very theoretical and/or methodological support they each need as viable linguistic approaches. The two approaches are not only compatible but

also complementary. Thus, they can and should be combined in language research and teaching, as will be shown in the following two sections.

ENHANCING LINGUISTIC RESEARCH VALIDITY/RELIABILITY BY COMBINING CGL AND CPL

Due to the aforementioned reasons, CGL and CPL, when employed together in linguistic research, can make research findings more valid, reliable, and informative. Several studies have demonstrated this clearly (Ellis & Simpson-Vlach, 2009; Gries & Divjak, 2009; Gries, Hampe, & Schönefeld, 2005; Gries & Wulff, 2005; Grondelaers, Geeraerts, & Speelman, 2007; Liu, 2010a, 2011c, 2013; Stefanowitsch & Gries, 2003). Due to lack of space, we will examine only Grondelaers, Geeraerts, & Speelman's (2007) and this author's (2011c, 2013; Liu & Zhong, 2016) studies to illustrate the ways CGL and CPL may be combined in research on language use and the unique values of doing so.

Study on the Dutch Word *er* in the Adjunctive-Initial Presentative Sentence

Grondelaers, Geeraerts, & Speelman (2007) investigated the use of the Dutch word *er* (a counterpart of the English *there*) as an expletive subject in the adjunct-initial presentative sentence structure exemplified by the following two sentences:

1. In 1977 was *er* een fusie tussen Materne en Confilux.
   "In 1997 there was a merger between Materne and Conilux."
2. In the keukenkast was een zoutvat.
   "In the kitchen cupboard was a salt tub."

As can be seen in the two examples, the use of *er* is optional in the adjunct-initial type of presentative sentence. For a long time, linguists were unable to clearly identify the rule(s) for the use/nonuse of *er* in this sentence structure. Using a well-designed corpus including both informal and formal Belgian and Netherlandic Dutch, the researchers successfully identified all the key factors governing the use of *er*. The first factor is the type of the initial adjunct: while temporal adjuncts (e.g., "In 2010 ...") almost always require the presence of *er*, locative adjuncts (e.g., "On the table ...") typically do not. The second factor is verb specificity: whereas verbs with low specificity (e.g., "be") demand the use of *er*, verbs of high

specificity (e.g., "stand") reject it. The third factor is dialectal difference: Netherlandic Dutch uses *er* significantly less than Belgian Dutch. The final factor is register: informal language tends to use *er* more often than formal language.

More importantly, by applying the CGL concept of "reference point" (an issue of construal/frame of reference) in their analysis, Grondelaers, Geeraerts, and Speelman were able to identify the reasons why *er* is often used with temporal adjuncts and verbs with low specificity but not with locative adjuncts and verbs with high specificity. A "reference point" is the focus point against which we reference everything else in an utterance. A sentence-initial adjunct constitutes such a reference point. Locative adjuncts (e.g., "on the table") are more specific or better reference points than temporal adjuncts (e.g., "in 2010") because the former type of adjuncts provides better accessibility to (i.e., easier processing/prediction of) the forthcoming information (the real subject) in an utterance by restricting the types of nouns that can serve as the subject. The things that can be placed (or serve as the subject for) "on the table" are clearly much more limited and hence more predictable than those that can occur "in a year," for almost anything, including non-concrete ones like "riot," can occur in a year. It is thus much easier to process/predict what may follow "on the table" (a locative adjunct) than what may follow "in 2010" in an adjunct-initial presentative sentence. This difference in the processing effect between locative and temporal adjuncts also exists between verbs of varying degrees of specificity. Verbs with a higher specificity (e.g., *sit/stand*) offer better accessibility and prediction of their subjects than verbs with a lower specificity (e.g., *be/exist*), because the things that can serve as the subject of a verb with a high specificity like *stand* are much more restricted and predictable than those that may serve as the subject of a verb with a low specificity like *be*.

To verify this CGL theory-inspired hypothesis, Grondelaers, Geeraerts, and Speelman did an experimental study where they investigated the difference in the amount of time required to read sentences that contained the two different types of adjuncts and verbs of varying specificity. The results indicate that reading sentences involving temporal adjuncts and/or verbs with lower specificity took significantly longer time than reading those with locative adjuncts and/or verbs with higher specificity. This finding confirmed their hypothesis. To further triangulate this finding, the researchers returned to their corpus to check and ascertain again whether

er was indeed used mostly in the sentences with temporal adjuncts and/or verbs with low/lower specificity but seldom used in the sentences with locative adjuncts and/or verbs of high/higher specificity. They obtained positive results, confirming their finding once more. Grondelaers, Geeraerts, and Speelman's study provides a classical example of how CGL and CPL can be combined to make research findings more valid, reliable, and insightful.

Studies of L1 and L2 Use of Synonymy

The author's studies (Liu, 2013; Liu & Zhong, 2016, included as Chapter 12 and Chapter 13 in this book) on the use and acquisition of synonymy offer further evidence about the need and value of combining CGL and CPL. Synonymy is important because it is ubiquitous and necessary for precise and effective communication. Yet, it is difficult because while synonyms express essentially the same meaning, they often convey different perspectives, connotations, and attitudes, i.e., they are not completely interchangeable. It is thus very difficult for linguistics and laymen alike to accurately identify and describe the differences among synonyms.

Liu's (2013) study examined native English speakers' use of two sets of synonymous nouns, *authority/power/right* and *duty/obligation/responsibility*, striving to ascertain the semantic and usage differences among the nouns in each set. The study began with a corpus-based behavioral profile (BP) examination of the two sets of nouns used in Mark Davies's (1990–2010) 400+million-word Corpus of Contemporary American English (COCA). Based on the Firth/Halliday/Sinclair lexical semantic theory that the meaning of a lexical item correlates closely with its collocates (Firth, 1957; Halliday, 1966; Sinclair 1966, 1991), the corpus-based BP approach focuses on the collocates or distributional patterns of a lexical item to effectively identify its semantic and usage patterns. Therefore, in my BP analysis, I queried and analyzed the typical pre-nominal adjectives and post-nominal modifying infinitives of the synonymous nouns because these per-/post-nominal modifiers can best reveal the meanings of nouns. For example, we say *individual right* (not *individual authority*) but *regulatory authority/power* (not *regulatory right*). Similarly, we usually say *the right to vote* but the *authority/power to levy (taxes)*, not vice versa.

The corpus analysis successfully identified the unique semantic/usage patterns of each of the synonymous nouns as well as the minute semantic

differences among the synonyms, yielding a clear delineation of the internal semantic structure of each synonym set. Yet, a scrutiny of the examples of the use of the synonyms in the data also shows that while there are clearly well-established semantic/usage patterns, there are some instances of use that break the general patterns. For example, whereas *right to vote* is the prevalent usage with 749 tokens in COCA (i.e., for most native English speakers in most cases, *to vote* is a *right*), there are, however, 8 tokens of *the power to vote* in COCA. Similarly, while the majority of speakers/writers used *power/authority to declare war* in the debates regarding whether the U.S. President or Congress has the *authority/power/right to declare war*, a few used *right to declare war* (7 tokens compared with 42 tokens in COCA). How do we explain such less common or deviated usages? The CGL concept of construal enabled me to find a good explanation not only for such usage variations but also for the general processes involved in synonym use. When speakers choose to use an uncommon or nonconventional usage, they are construing the issue under discussion differently than usual, as can be seen in the following example from COCA: "Our ancestors struggled and died to give us the *power to vote*. Let's not let them down. Vote!!" This was a quote from a letter to *Ebonics* (a magazine for Afro-Americans). Clearly, in saying *power to vote*, this letter writer construed voting more as a *power* than a *right*. Similarly, those speakers/writers who opted for *the right to declare war* expression construed the declaration of war not just as an *authority/power* issue but also as a moral issue as it concerns the destruction of human lives.

So the CGL theory-inspired corpus analysis suggests that conventional usage (the established frequent usage pattern) and construal constitute two key competing factors in synonym use: speakers/writers typically opt for conventional usage unless they have a unique construal of the situation that calls for a nonconventional usage. However, without asking the speakers/writers about how they made their synonym selection decisions, this hypothesis about synonym use cannot be confirmed. Given that it is impossible to ask the speakers/writers in a corpus for such information (a clear weakness of corpus study), I conducted a forced-choice study where the participants were asked to (1) fill in each missing synonymous noun in sentences (taken directly from COCA but with the target synonyms deleted) by selecting one of the three nouns in each set and (2) describe their rationales for their selection decisions. The results from this elicited data offer convincing support for the finding about the competition of

conventional usage and construal in synonym use. Many subjects often mentioned conventional usage as the reason for their synonym selections. Yet, in cases where some of the subjects chose an unconventional usage, they typically described their unique construals as the rationale for their choices. As one example, a subject chose *the right to vote* in one of the questions dealing with "*authority/power/right to vote*" because, in her words, "I'm just used to hearing 'right to vote' (equated with suffrage)" but she selected *the power to vote* in the other *authority/power/right to vote* question: "... give the voters the _____ to vote for 'None of the Above'") and her reason was: "Honestly, the other two just seem not to fit well. 'Power' equates ability." So, one of her choices in this case was driven by conventional usage and the other by a unique construal.

Using basically the same procedures, this author's (Liu & Zhong, 2016) study compared the use of four sets of synonyms (two sets of nouns and two sets of adverbs) by both native English speakers and intermediate/advanced Chinese learners of English. The native English corpus used consisted of the spoken and academic written sub-corpora of COCA and the Chinese EFL corpus used was Wen, Wang, & Liang's (2005) *Spoken and Written English Corpus of Chinese Learners* (SWECL). The elicited data part of the study used exactly the same procedures as those used in Liu's (2013) study described above. The Cognitive Linguistics theory-guided analysis of the corpus and elicited data yielded some important findings about L2 use/learning of synonyms that could not have been obtained otherwise. The key findings include the following. First, frequency of exposure plays a crucial role in the use/learning of synonyms. Second, L2 learners (especially intermediate-level learners) show special difficulty with conventional usages in synonymy and they also substantially underuse and misuse the non-dominant (less-frequent) members in a synonym set. Third, conventional usage and construal are two key competing factors affecting speakers/writers' synonym choice decisions, especially in the case of native English speakers. These findings have useful implications for L2 learning/teaching of synonyms, such as the need to provide learners first with adequate input on the conventional collocates of synonyms and then, as learners' L2 proficiency increases, to encourage the use of non-dominant members in a synonyms set and pay attention to issues of construal (Liu & Zhong, 2016).

In short, the above examples show that combining CGL and CPL in research on language use can make our research findings more valid,

reliable, and informative. The typical procedure is to begin with a corpus exploration/analysis, then use a CGL theory-based empirical (often experimental) study to test and/or explain the corpus data/findings, and, if necessary, retest the CGL theory/finding with additional corpus analysis (e.g., Grondelaers, Geeraerts, & Speelman, 2007; Liu, 2013; Liu & Zhong, 2016). Alternatively, one can begin with an experimental study on a CGL-based hypothesis/theory, followed by a corpus analysis to test/confirm the experimental results, or one can directly conduct both an experimental and a corpus study simultaneously for synchronic triangulation of findings (e.g., Ellis & Simpson-Vlach, 2009; Gries, Hampe, & Schönefeld, 2005; Gires & Wulff, 2005). Also, more than one type of experimental procedure can be used in one study to better triangulate the findings, as shown in Ellis & Simpson-Vlach's (2009) study where, to investigate the validity of corpus-generated academic English formulae (constructions), they conducted four experiments including (1) speed of reading and grammaticality judgment, (2) speed of reading and rate of spoken articulation, (3) binding and primed pronunciation, and (4) speed of comprehension and acceptability judgment of formula in context. The challenges involved in doing combined CGL/CPL research will be discussed in the conclusion section.

INCREASING LANGUAGE TEACHING EFFECTIVENESS BY INTEGRATING CGL AND CPL

Rationale

CGL and CPL approaches can also be combined in language teaching to make L2 teaching more engaging and effective. There has already been substantial research on how CGL and CPL each alone can be used to make L2 learning/teaching more effective (e.g., for CGL-inspired language teaching: Boers, 2000; De Knop, Boers, & De Rycker, 2010; Kövecses & Szabó, 1996; Tyler, 2008, 2012; for Corpus-based language teaching: Boulton, 2009; Cobb, 1999; Liu, 2011a; Liu & Jiang, 2009; Sun & Wang, 2003; Sinclair, 2004; Yoon & Hirvela, 2004). Yet, there have been few studies on how CGL and CPL can be combined to further enhance L2 teaching effectiveness, perhaps due again to the surface differences between the two linguistic approaches. More effort is needed to integrate CGL and CPL in language teaching because, as already noted above, the two approaches are not only compatible but are also complementary, i.e.,

they need each other to be fully successful. This is especially true when they are used in language teaching.

To understand why, a brief discussion of the value of each approach and its need of the other in language teaching is in order. CGL-inspired language teaching alone can make L2 learning more effective by exploring the conceptual motivations of language (Boers, 2000; Cho, 2010; Kövecses & Szabó, 1996; Tyler, 2012). For example, in an empirical study, Kövecses & Szabó (1996) taught to two groups of EFL students phrasal verbs made up of the particle *up* and *down* (e.g., *move up, go up, cut down, die down*). The students in the experimental group were made aware of the conceptual metaphors that motivate the phrasal verbs, such as "More is up" and "Less is down." The students in the control group learned the phrasal verbs without exploring the motivating conceptual metaphors. The results indicate that the experimental group significantly outperformed the control group on the achievement test. Other studies have also showed the same positive effect of exploring the motivations of language usages in language teaching, including the teaching of various language structures such as multi-word units, prepositions, and modal verbs (Boers, 2000; Cho, 2010; Tyler, 2012). However, for CGL-inspired exploration of language usages to be valid, authentic and representative language data must be used. Corpora (especially well-designed large ones) are the best and most accessible source of such language data (Juchem-Grundmann & Krennmayr, 2010; Liu, 2010a).

While CGL-inspired teaching must make use of corpus data, corpus-based/driven language teaching needs to include CGL-inspired language analysis in order to be fully successful. Although corpus-based/driven language learning alone has been shown to help make L2 learning more effective thanks to the natural language data and the discovery learning opportunity it offers language learners (Aston, 2001; Boulton, 2009; Cobb, 1999; Liu, 2011a; Liu & Jiang, 2009), such data-based/driven learning has so far focused mainly on finding language usage patterns/rules, i.e., it seldom explores why the language usage patterns/rules are the way they are. Exploring and understanding the motivations of language usages will not only enable learners to better grasp language (as shown in the research reported above) but also make language learning more engaging because, by focusing on the conceptual motivations of language usages, CGL-inspired teaching makes language learning "a far more natural and enjoyable process" than traditional approaches (Langacker, 2008, p.73). A

few studies have already showed how incorporating CGL-inspired analysis in corpus-based/driven language learning may make language learning simultaneously more engaging and successful (Juchem-Grundmann & Krennmayr, 2010; Liu, 2008c, 2010a; Liu & Zhong, 2016). It is important to note, though, that as efforts in a new endeavor, these few studies on combining CGL and CPL in language teaching have not provided much direct, hard empirical evidence for the effectiveness of this teaching practice. Yet they have offered substantial indirect evidence with many concrete examples, as will be shown below.

Teaching English, Using Conceptual Metaphors

Juchem-Grundmann & Krennmayr (2010) studied how a metaphor-driven approach based on corpus data could enhance L2 learners' understanding of business English. As already noted, conceptual metaphor, along with other conceptual operations, plays a key role in language. Much of our language is conceptual metaphor-based (e.g., the expression *Google beat Yahoo in the Internet search business* is based on the conceptual metaphor "business is a game/competition"). Motived by previous research findings that making learners aware of the key conceptual metaphors used in a given discourse can help learner better grasp such language, Juchem-Grundmann and Krennmayr tried to apply the practice in teaching business English. To make sure that the conceptual metaphors taught in business English classes were indeed the ones used in real business English, they first conducted a close analysis of the use of metaphors in a business sub-corpus of the British National Corpus. They identified sports and war as the dominant conceptual metaphors in business English.

Based on their corpus findings, they then did a teaching experiment involving two sections of a business English reading course. One section served as a control group where the students were taught in the traditional way of first studying new business vocabulary in the assigned reading. The other section was taught using the metaphor awareness-first approach where the students were asked first to think about the sports they were familiar with and then to identify the sports metaphors in the reading material. Moreover, the class also explored the relationship between the source and target domains of the conceptual metaphor, i.e., how business was conceptualized as sports and often portrayed in sports terms. The teacher observed very positive effects of the metaphor awareness approach: students taught by this approach were much more active than those in the

control group. An oral survey of the students after the course also showed very positive response. The students said they enjoyed the metaphor exploration activities and found them creative and engaging. However, the researchers did not use an objective test to measure and compare the language learning gains between the two sections. So, while the study provided some qualitative data support for corpus-based cognitive analysis, it did not offer any hard supporting evidence based on quantifiable data.

Teaching Challenging Lexico-Grammatical Questions: Collocations, Parts of Speech, and Count/Non-Count Noun Classification

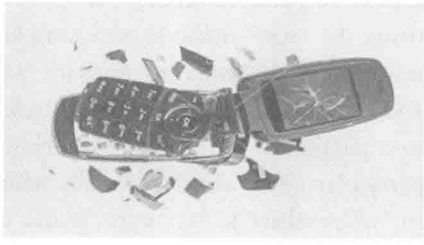
Why do English speakers say *make a move*, but *take a step*, not the other way around? Why can *walk* also be a noun when it actually refers to an action? Why is *rice* a non-count noun when it actually appears in clearly distinct pieces? Collocations, parts of speech, and count/non-count noun differentiation are some of the many difficult lexicogrammatical issues. How to teach them is often a challenge, but corpus-based cognitive analysis may help in dealing with these issues. Chapter 8 provides a detailed account on how corpus-based cognitive linguistics may help us better teach collocations by exploring the motivations behind collocations. This section focuses on the teaching of parts of speech and count/non-count noun differentiation.

Regarding parts of speech, traditional definitions and explanations on this issue (e.g., "A noun is thing, person ... while a verb refers to an action") are clearly quite inadequate, for they cannot really explain why, as noted above, the same word can function both as a noun and a verb. Cognitive linguistics offers a better explanation. According Cognitive Linguistics, our understanding of the world is always mediated by the human mind via conceptualization, categorization, and construal. All categories of things are thus the creations of the human mind to help us sort out and understand the world. In other words, categories are not preexisting entities. This also applies to parts of speech. Langacker (2008) illustrates this point clearly by using the word *yellow* as an example. As we know, *yellow* can function as a noun (e.g., "*Yellow* is my favorite color"), an adjective (e.g., "*yellow* shirts"), and even a verb (e.g., "The shirt *yellowed* with age"). *Yellow* as a noun refers to a particular *thing* in the realm of color. As an adjective, it refers to a particular color associated with whichever noun it modifies (e.g., the *shirt* in "*yellow* shirt"). As a verb, *yellow* expresses a process in which the color

of a given thing gradually changes into the color *yellow*. In other word, any word used to refer to what is conceptualized as a thing is then a noun and any word used to refer to a process is a verb. This cognition-based account is especially useful in explaining nouns derived from a verb, such as *completion* and *fulfilment* , because, in contrast to their counterpart verbs, *complete* or *fulfil*, which describes a process; the nouns derived from the verbs each designates the process as a thing. To help learners better understand and retain this cognitive linguistics-based classification, the teacher can ask students to query a corpus to find examples of the aforementioned types of lexical use and explore how these examples help show and support the classification system, especially how the uses of the same word in two different parts of speech reflect the speakers/writers' different construals of the event in question.

Concerning the issue of count vs. non-count nouns, traditional definitions and classifications, such as "A count noun is a thing that we can count and a non-count noun is a thing we cannot count," are clearly inadequate for students. This is because, as noted above, such a classification often leaves one wondering why *rice* is a non-count noun. Cognitive linguistics offers two better perspectives or practices to differentiate count and non-count nouns. The first defines a count noun as an object and a non-count noun as a substance. An object is something (e.g., a car, computer, or a phone) that when broken, its pieces may no longer be referred to as the object while a substance is something (e.g., bread, meat, and rice) when broken its pieces are still the same substance (as shown in pictures in Figure 1). This object vs. substance distinction helps learners be better able to know whether a noun is count or non-count. The second cognitive linguistic perspective for count/non-count differentiation is whether the thing in question is being construed as bounded or not. Anything that is bounded is a count noun while anything that is unbounded (typical

Figure 1: Substance vs. an object when broken

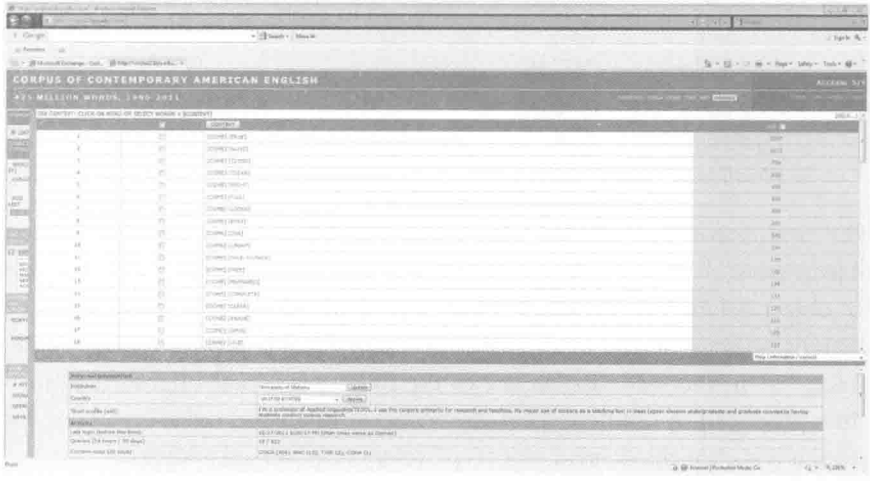


examples include *oil* and *water*) is a non-count noun. This can help explain why some typical non-count nouns can be used as count nouns and vice versa. For example, *Water* is a typical non-count noun, but we can say *international waters*, *shallow waters*, and *two waters*. In these latter examples, we refer to water in bounded areas, for *international waters* equal the areas of the water in a sea or an ocean that are not controlled by any one country; *shallow waters* are the areas of water that are shallow; *two waters* refer to the water in the two containers (cups or glasses) being used. On the other hand, count nouns such as *country* and *room* may be used as non-count nouns when they are used in the unbounded senses: *country* meaning rural land and *room* meaning space. Again, after providing the cognitive linguistics-based count/non-count noun perspectives, the teacher can ask students to find examples of the aforementioned types of count and non-count noun uses to help learners reinforce their grasp of the distinctions.

Teaching Collostructions

Corpus-based cognitive analyses may also be used to more effectively teach language collostructions (Liu, 2011c). One example relates to the teaching of the usage patterns of the following two pairs of constructions: *come+adjective vs. go+adjective* and *keep+something+adjective vs. leave+something+adjective*. After having students do a query of the tokens of the collostruction in each pair (a screenshot of the result of such a query from COCA is given in Figure 2), we can ask them whether they notice any patterns regarding the two

Figure 2: COCA concordance results of tokens of *come-adjective*



structures in each pair. With some prodding by the teacher, students should be able to notice that the *come/keep-adjective* tokens in each pair typically express a positive meaning (e.g., *came alive/true* and *kept one happy/healthy*) whereas the *go/leave-adjective* tokens usually convey a negative meaning (e.g., *went crazy/wrong* and *left someone homeless/injured*). Then we ask students to think, based on their experience, why this is the case. Such a CGL-inspired analysis should help learners uncover the motivations of the patterns: what we want to *come* to us and *keep* are things desirable and what we want to *go* away from us or *leave* behind are things undesirable.

Teaching Schematic Constructions

Corpus-based cognitive analyses can also be used to help learners uncover and learn unfilled, schematic constructions. An example relates to the teaching of what (Goldberg, 2005) calls "the implicit/de-profiled theme [object]" construction where the object of a transitive verb is deleted (see examples 3–6 below, taken from Goldberg, 2005 and Liu, 2008a). Learning this construction pattern is very important but difficult for ESL learners with a pro-drop L1, such as Chinese. This is because, as already mentioned in section 2.2, English is not a pro-drop language, i.e., it does not usually allow object deletion while Chinese, on the other hand, is a radical pro-drop language. Due to L1 influence, Chinese learners of English tend to drop the object in many cases where it is not allowed. In order to help learners understand when limited object-deletion is allowed in English, we can provide students with representative examples of object-deletion sentences from corpus data such as sentences 3–6 and then ask them to think about the motivations for the deletion in each case.

3. *Tom blew/sneezed into the paper bag;*
4. *John gives to charity regularly;*
5. *Tigers only kill at night;*
6. *We all have to give and take.*

The first reason the students may come up with is likely that the deleted objects were all clearly implied and recoverable (which is the main rationale for object deletion in Chinese). However, being recoverable alone does not warrant object deletion in English. For example, the two omissions of the object "it" in the second sentence of the following actual English utterance often produced by Chinese speakers/writers of English is not acceptable even though it is clear the deleted object "it" refers to X's email address:

7. *Do you have X's email address? *Give me if you've (>Give it to me if you've it).*

One of two other conditions must be met before an implied object can be deleted. (1) The object is something unpleasant/inappropriate to mention, as in sentence 3 where what Tom blew/sneezed into the paper bag was obviously some bodily fluid — something unpleasant, and in sentence 4 where what John gives to charity must be money and it is often considered inappropriate in the West to mention what and how much money one gives to charity. (2) The object is not the focus of the utterance, as in sentences 5 and 6 where the focus is on the activity (e.g., killing/giving/taking), not the object.[2] Understanding the motivations for this "de-profiled theme/object" construction should enable students to know better when and where it can be used.

To fully grasp a schematic construction, students should be encouraged to use it in different contexts. Extending a learned construction to new context is how humans acquire language. A good example can be found in the utterance "*Don't Rodney King me*," which Jesse Jackson (a renowned Afro-American civil rights leader) made to police when he was being arrested for trespassing at a protest (in front of a prison) against the execution of an inmate. In his utterance, Jackson was asking the police not to treat/beat him like Rodney King, an Afro-American famous for being severely beaten by police in 1992. Jackson's utterance was clearly modeled on the *Don't+noun-turned-verb+me* construction with *Don't baby me* as its prototype.

In helping learners effectively grasp a construction, we should first teach them the prototypical form of the construction and then move onto the less prototypical forms. This is because research has shown that skewed input and practice of the prototypical form of a construction facilitates the acquisition of the construction (Ellis, 2008). Let us look at the example of what is called the *way* construction (Goldberg, 1995; Taylor, 2002), as illustrated in the following examples.

8. *They found their way to the hotel/conference site;*
9. *He fought his way out to safety;*
10. *He worked/slept his way through college/to the top;*
11. *The country cannot simply spend its way out of this deep recession.*

In this construction, *find X's way to/out* is the most prototypical form whereas *spend X's way out of recession* is clearly the least prototypical in the group. We should first give students many examples of the more

prototypical forms and have them identify the key components of the construction: 1) the word *way* functioning basically as an object and 2) an obligatory prepositional adverbial phrase after the word *way*, such as *to/out*+NP. After discussing the main semantic/syntactic features of the construction, we can ask students to find more examples of the construction in a corpus and then to produce meaningful sentences of their own based on the examples. It is important to note that creative use of constructions constitutes the foundation of language use in all languages. For example, from the prototypical forms of the Chinese "*verb*+*out(*出了*)*+*N*" resultative construction "做出了/算出了答案," Chinese speakers have produced many creative uses of the construction: 打出了/闯出了一片新天地 and 写出了/唱出了新希望/心情/形象.

However, while we encourage our students to use constructions creatively, we should simultaneously help students understand the constraints on each specific construction. This is because it is well-known that L2 learners often over-generalize the use of constructions as shown in the following incorrect ESL/EFL utterances modeled on the ditransitive "cause to receive" construction:

12. **I sent Chicago a parcel.*
13. **He opened her the door.*

A cognitive analysis can help learners understand the constraints of the construction, i.e., understand why these utterances are not acceptable but others like the following two are perfectly fine:

14. *I sent Tom a parcel.*
15. *He opened her a beer.*

Although, like 14 and 15, utterances 12 and 13 conform to the syntactic pattern of the ditransitive construction, they differ from them in that they violate the "cause to receive" meaning of the construction. Chicago is a place and hence cannot be a receiver of the letter; one has to say *I sent a parcel to Chicago.* The utterance *open someone the door* violates the "cause to receive" meaning because, when we open a door for someone, we usually do not and cannot give it to the person. In contrast, *open someone a beer* works because a person (especially a bar tender/waiter) may indeed open a beer and give it to another person to drink. Knowing constraints like these on the use of a construction can help L2 learners avoid overextending the use of the construction.

CONCLUSION, CHALLENGES, AND FUTURE DIRECTIONS

This paper has tried to show how combining CGL and CPL may make research on language use more valid/informative and language teaching more engaging/effective. Given that the practice is new, especially in the field of language teaching, there are some questions and challenges that must be considered and addressed. I will discuss the questions and challenges of using the approach in language research first and then those in language teaching. In the discussion, where appropriate, I will briefly mention the types of research that are still needed to test and advance the approach and how they may be done.

Concerning the use of the approach in language research, while there is little question about its value in increasing the validity and reliability of research, there are challenges related to its implementation. First, because corpus analysis is involved, all of the challenges faced by corpus research must also be dealt with in this approach, including ensuring the appropriateness/representativeness of the corpus data and using the right query and analysis corpus analysis methods. For example, in doing a behavioral-profile corpus analysis of lexical semantics and usage patterns, it is very important to know which distributional/collocational features of the lexical item to query/examine, because the distributional/collocational patterns that are informative for the study of lexical items often vary from one part of speech to another (Liu, 2010b, 2013; Liu & Espino, 2012). It is also important, but often difficult, to correctly analyze/interpret corpus research results because sound interpretation of corpus research results requires not only strong linguistic knowledge but also patience and effort. It is often a slow and tedious process to tease out the fine-grained semantic nuances of a lexical item. Second, CGL theories are complex and abstract in nature. To apply and/or test them appropriately in a given study calls for a solid grasp of CGL concepts and empirical (especially experimental) research methodology as well as a thoughtful consideration of what specific CGL theory and research design work best for the research questions at hand. Third, the triangulation of CPL and CGL-based research findings demands an enormous amount of time, effort, and knowledge/skills.

Compared with its use in language research, the practice of combining CGL/CPL in language teaching faces even more serious questions and challenges. First and foremost, as mentioned earlier, although there has been ample empirical research showing how CGL and CPL can each be used alone

to make language teaching more effective, there has not yet been any empirical study that directly and objectively tested the effectiveness of the combined teaching practice. The few existing studies that did explore this teaching practice have offered only indirect support about its effectiveness. This lack of direct empirical research on this teaching approach may, however, be a blessing in disguise for language teachers and researchers alike because it presents us with an excellent opportunity to conduct empirical studies on this issue. An ideal empirical study in this regard will likely involve a comparison of the effectiveness of this new approach against that of a traditional teaching approach or an approach that uses either CGL or CPL alone. The comparison should be based on an objective measurement of the students' learning gains produced by each teaching approach.

The second main issue involved in combining CGL and CPL in language teaching is that there are many variables that may affect the effectiveness and/or feasibility of the approach, such as learner age, learning style, and learning environment (including the accessibility of corpora). Age is a factor because corpus-based cognitive analysis requires mature cognition and a decent amount of world experience; therefore this approach will not work well for young learners due to their limited cognitive ability and experience. Also, while analytical learners may thrive with the approach, holistic learners may suffer. It seems, though, that this teaching approach may work well for many Chinese college students, thanks to their cognitive maturity and the reported wide use of analytical learning/teaching strategies in the Chinese classroom. Yet Chinese college English teachers should still be cautious when using the approach because of the likely variations in students' learning styles. Regarding learning environment factors, access to corpora for both teachers and students is necessary for the approach to be fully functional. However, the approach may still work if only the teacher has access to corpora, though less effectively. The teacher can print out and give students corpus search results for them to study. Of course, besides the two aforementioned major issues, all of the questions and challenges related to the use of the approach in language research mentioned earlier are also relevant to the use of the approach in language teaching.

However, despite the questions and challenges, combining CGL and CPL in language research and teaching is a promising and worthy effort in our quest for more valid and informative research findings and more engaging and effective language teaching. Hopefully, this article will inspire more language teachers and researchers to join this worthy endeavor.

Notes

1. The terms "theories" and "approaches" are combined with a slash because there has been a disagreement regarding whether corpus linguistics is a theory or merely an approach. Also, capital initials are used for Cognitive Linguistics here to refer to the cognitive linguistic theory developed by, among others, Langacker (1987, 1991) and to differentiate it from other cognitive linguistic theories, such as generative linguistics.
2. There are also a few situational contexts that license English object deletion, such as instructions on food/medicine containers, e.g., "Mix/shake well before use" (Liu, 2008a). For lack of space, they are not discussed here, however.

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Chapter 8

Going beyond Patterns: Involving Corpus-Based Cognitive Analysis in the Learning of Collocations

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LITERATURE REVIEW

What Constitutes a Collocation? An Examination of Definitions

To begin with, it is necessary to note that the discussion of the definition of collocation here is not meant as a thorough review but only a brief overview of the issue from a language-teaching perspective.[1] It is well known that "what goes under the header of 'collocation' is very heterogeneous" (Wouden, 1997, p.53). The meaning of the term often varies depending on one's research purpose and theoretical orientation. Yet a closer look at the term will show that its various uses boil down basically to two major meanings. The first is the uncountable use of the term referring to a linguistic property — "the tendency for certain words to occur together" (Finch, 2000, p.152), i.e., to co-occur more often than by chance. The second is the countable use of the term referring to specific habitual combinations of words that are often treated as lexical items or units. The first meaning is a much broader concept as it covers not only the latter (habitual combinations of words) but also the issue of collocation in cases where the lexical items that often co-occur do not form lexical units. For example, "the word *toy* co-occurs with children more frequently than with women and men [because] toys belong to children, on the whole, rather than adults" (Hunston, 2002, p.68). However, although *toy* and *children* often co-occur, they do not form a habitual combination as a lexical unit. Their co-occurrence can only be considered a collocation issue in the broad sense defined by Sinclair: "Collocation is the occurrence of two or more words within a short space of each other in a text" (1991, p.170).

This broader use of the term seems to be of interest only to those scholars working on lexicogrammatical patternings (e.g., Hunston, 2002; Hunston & Francis, 2000; Sinclair, 1991). For those working in language teaching and lexicography (e.g., Bahns & Eldaw, 1993; Benson, 1989; Keshavarz & Salimi, 2007; Lewis, 2002; Nesselhauf, 2003; Willis, 2003), collocation means primarily habitual combinations of words, such as *do* (not *make*) *laundry* and *make* (not *do*) *a case*, although these scholars do not always agree on what types of habitual combinations may be considered collocations. Language educators' primary interest in habitual combination is best evidenced by their emphasis on the collocatability or restrictions on how words can be combined. For example, according to Richards, Platt, & Webber (1985, p.46), the study of collocations focuses on "the restrictions of how words can be used together, for example which prepositions are used with particular verbs and which verbs and nouns are used together."

Obviously, it makes good sense for language educators to focus on habitual collocations and exclude co-occurrences of words that are not habitual combinations because the latter type does not have much pedagogical value. However, as already mentioned, language educators currently do not have a consensus on what types of word combinations qualify as collocations. They often cannot agree on how fixed in structure and how transparent in meaning a word combination must be in order to be considered a collocation (Fernando, 1996; Nesselhauf, 2003). For some scholars, a collocation is fairly fixed in structure but for others it can have considerable variation. In terms of semantic transparency, most scholars (e.g., Fernando, 1996; Moon, 1998; Nesselhauf, 2003) believe that collocations are fairly transparent and thus should not include idioms, although a few (e.g., Palmer, 1933; Wouden, 1997) consider idioms to be collocations. Despite the divergent views, most language educators appear to agree that collocations are those word combinations that have restricted structural variation and differ from entirely free word combinations on the one hand and idioms on the other (Bahns & Eldaw, 1993; Crowther, Dignen, & Lea, 2002; McCarthy & O'Dell, 2005; Nesselhauf, 2003; O'Dell & McCarthy, 2008). Collocations so defined are, using Moon's (1998) terminology, "restricted collocations" (p.27) or, in Fernando's (1996) words, "habitual collocations" with "restricted variance" (p.32). Yet even with this narrow definition of collocation, it is often still difficult to decide whether specific word combinations are collocations. This is because the key element in the definition is "restricted variation" and, when used to

identify collocations, it is not a binary yes-or-no criterion but rather one of scale (see Nesselhauf, 2003, p.225). To help alleviate the problem, some scholars have divided collocations into scaled subcategories, for example, "strong," "medium strength," and "weak" (Crowther, Dignen, & Lea, 2002, p.vii) or "fixed," "strong," and "weak" (O'Dell & McCarthy, 2008, p.8).

Are Collocations Arbitrary? Clarification of Key Terms

A major issue related to the definition of collocations that is of particular importance for this paper is whether collocations are arbitrary. A quick look at the literature on the issue seems to suggest that many linguists and language educators consider collocations arbitrary. For example, Benson (1989, p.3) contends that "collocations should be defined not just as 'recurrent word combinations', but as 'arbitrary recurrent word combinations.'" Similarly, Smadja & McKeown (1991, p.230) believe that "[a] collocation is an arbitrary recurrent word combination." Lewis (2002, p.26) also sees collocations the same way: "Collocation, as I have shown, is arbitrary: *high/tall building*; *tall boy* but not **high boy*. *Prices rise and fall*; you can *rise to the occasion* but not **fall to the occasion*." Likewise, Nesselhauf (2003, p.225) uses "arbitrary restriction on substitutability" as the key feature in defining collocations. In a similar vein, other scholars have used words like "unmotivated" and "unpredictable/unpredictability" in defining collocations (e.g., Chan & Liou, 2005, p.231; Hunston, 2002, p.86; Nation, 2001, p.317). Given the prominence of the issue in this paper, it is important that we accurately understand what the scholars mean by the use of the word "arbitrary" (and its related terms "unmotivated" and "unpredictable") and to what extent they believe collocations are arbitrary.

A scrutiny of the scholars' discussions, including their explanations of why they consider collocations arbitrary, suggests that there are at least three different perspectives or meanings in the use of *arbitrary*. The first one views collocations as arbitrary from a cross-linguistic perspective, as shown in Benson's (1989) support for his argument about collocations' arbitrariness:

> The arbitrary (as opposed to free) nature of collocations can be demonstrated when they are juxtaposed with corresponding collocations in other languages ... For example, when referring to a police officer whose duty it is to keep traffic moving, one says in French — *régler la circulation*, in German — *den Verkehr regeln* ...

The interlanguage comparisons given in the quote clearly illustrate Benson's cross-linguistic perspective on the issue. The second perspective is an

intralinguistic one, which sees collocations' arbitrariness in terms of their syntactic and semantic abnormality, as expressed clearly by Smadja & McKeown (1991):

> A collocation is arbitrary because it cannot be predicted by syntactic or semantic rules. For example, "strong" and "powerful" are both adjectives and are synonymous in meaning, but 'strong' is used to modify "tea" and "powerful" to modify "car" and not vice versa. (p.230)

A strong version of this intralinguistic view is that the meaning of a collocation cannot be derived from the meanings of the words in it. Instead, its meaning is a unit of meaning arising out of the collocation in and of itself. In this view, *strong tea* or *powerful car* is a unique linguistic unit whose meaning is noncomposite. Of course, not all of those who hold the intralinguistic perspective on collocations' arbitrariness share this view, at least not completely. Some do not consider noncomposite meaning to be a feature of collocations (Bahns & Eldaw, 1993; McCarthy & O'Dell, 2005; Nesselhauf, 2003). To them, noncomposite meaning is a distinctive feature of idioms only, that is, it distinguishes idioms from collocations. There are still others who either think there is only a certain degree of noncomposite meaning in collocations or believe only some collocations are noncomposite in meaning (Crowther, Dignen, & Lea, 2002; Nation, 2001).

The third perspective approaches the arbitrariness of collocations both as a language-processing and a language-learning issue, as can be seen in Lewis' (2002) comment after he supported his argument about the arbitrariness of collocations with the examples of *tall* but not **high boy* and *rise* but not **fall to the occasion*: "This non-generalisability clearly indicates that we meet and store words in the prefabricated chunks upon which the Lexical Approach is based" (p.26). Of course, Lewis' perspective can be considered a combination of the first and the second, because it encompasses both the cross-linguistic view (i.e., learning a second language [L2] using his Lexical Approach) and the intralinguistic view (i.e., collocations are prefabricated and unsuitable for normal language processing). Like Lewis, most L2 educators appear to use the term *arbitrary* in the combined sense (e.g., Keshavarz & Salimi, 2007; Nesselhauf, 2003), because, in their discussion about collocation learning, they all point out both the problem of semantic arbitrariness in the choice of words in collocations and the special difficulty such arbitrariness presents to L2 learners. Nation's (2001) definition of collocations best represents this

two-sense view: "*From a learning point of view*, it makes sense to regard collocations as items which frequently occur together and *have some degree of semantic unpredictability*" (emphasis added, p.317).

Next, the terms *unmotivated* and *unpredictable* are discussed. It seems that these terms are synonymous with *arbitrary*, because they are often used to define or portray the arbitrariness of collocations. An excellent example is found in Smadja & McKeown's (1991) explanation quoted earlier: "A collocation is arbitrary because it cannot be predicted by syntactic or semantic rules" (underscoring added, p.230). Compared with *unmotivated*, *unpredictable* is used much more widely, perhaps because it can be used in both the cross-linguistic and intralinguistic senses; that is, collocations can be unpredictable either because of their difference from other languages or because of their semantic and/or syntactic unconventionality. In contrast, *unmotivated* is generally used in the intralinguistic sense because, when researchers say a collocation is semantically unmotivated, they mean there is no clear reason for the selection of the words in the combination based on the meanings. Of course, when L2 speakers consider a collocation unmotivated, it can become a cross-linguistic issue, if they base their decision on the meanings of the words in their first language (L1) rather than in the L2, but making a decision in this manner is not really valid, a point I discuss in detail later.

Concerning the extent to which these scholars believe collocations are arbitrary, my examination suggests a substantial variation but their views can be divided roughly into two major groups. The first holds the view that collocations are all arbitrary although their degree of arbitrariness may vary (e.g., Benson, 1989; Nesselhauf, 2003; Smadja & McKeown, 1991). The second group takes the position that not all collocations are arbitrary (e.g., Crowther, Dignen, & Lea, 2002; McCarthy & O'Dell, 2005).

It is also important to note that many educators' belief that collocations are arbitrary can been seen in their discussion about how collocations should be taught. For example, as early as the first part of the last century, Palmer (1933) argued that each collocation "must or should be learnt, or is best or most conveniently learnt as an integral whole or independent entity, rather than by the process of piecing together their component parts" (p.4). The same view is still held by many today. In a discussion about collocation teaching, Lewis (2000) writes,

> Collocations are **not** words which we, in some sense, "put together," they occur naturally, and the first task of the language teacher is to ensure that they are not unnecessarily taken apart in the classroom ... the words [of a

collocation] should be recorded together. (p.132)

In the same vein, Hill (2000, p.53) suggests that collocations should be learned in such a way that "we can retrieve them from our mental lexicon just as we pull a phone number or address from our memory."

However, recent cognitive and corpus-based research appears to suggest that even those collocations that have been used as classic examples to illustrate the arbitrariness of collocations might not be arbitrary from an intralinguistic perspective. A case in point is the "high/tall building but no high boy" example that some scholars have used to show the arbitrariness of collocations (e.g., Lewis, 2002). Dirven & Taylor (1988) did an excellent cognitive analysis of the usage patterns of *high* and *tall*. They demonstrate that, although both adjectives can express "vertical extent" measuring from the base of an entity (often the ground or floor), for example, *high* and *tall* building or mountain, only *high* can express "positional *high*," a concept that does not entail measuring from the ground but only in "reference to ground or floor level" as in the cases of *high ceiling* and *high clouds* (p.380). They also show that *tall* is often used to describe living things such as people and plants, whereas *high* is not. Tsui's (2004) interesting corpus study reveals that *tall* is used almost exclusively to modify concrete things and its overall frequency is low; in contrast, *high* boasts a much higher frequency and wider semantic range, because it can be used to describe many abstract concepts such as intensity, amount, and quality. Also, although *high* is sometimes also used to modify concrete nouns, the percentage is very low with a ratio of approximately 30% concrete versus 70% abstract. One weakness of Tsui's (2004) study is that it did not explore the causes for the usage and semantic differences, a problem found in most corpus-based studies on collocations. Specifically, she did not explore why *high* is used mostly as a modifier of abstract nouns while *tall* is mostly used to describe concrete nouns. A cognitive analysis similar to Dirven and Taylor's could have provided the answer.

Based on Dirven & Taylor's (1988) study and also according to the *Oxford English Dictionary* (*OED*, 2008), the key meaning of *tall* deals with the height of people or things, especially living things, measured from the ground up; in contrast, *high*, while also having this meaning, may refer to a positional high space not measured from ground up. This non-ground-based meaning of *high* may account for the extensive abstract and figurative use of the adjective because *things* that are said to be high in the abstract

sense (e.g., *high spirit* and *high motivation*) do not have any true base (ground) from which to measure their height. The semantic and usage differences also help explain why one can say "*high/tall* building" but only "*tall* boy." In fact, because of its aforementioned core meaning and usage, *high* is seldom used as a modifier of *building*, according to my corpus examination.

PURPOSE OF THIS STUDY AND THE DEFINITION OF "ARBITRARY" ADOPTED

The new research findings about the use of *high/tall* raise serious questions about the arbitrariness of most collocations and the way collocations should be taught. It is the purpose of this study to examine what typical types of collocations are included in current collocation dictionaries and textbooks, whether they are mostly arbitrary based on close corpus-based cognitive analyses, and how collocations are actually taught. Based on the research findings of the study, appropriate pedagogical suggestions are proposed. Because there are different interpretations or perspectives on the meaning of *arbitrary* as shown earlier, spelling out the definition adopted for this study is first in order.

The meaning of *arbitrary* used in this study is limited to the aforementioned intralinguistic one; that is, it means *semantically unmotivated*. It excludes the cross-linguistic meaning, because although it is certainly valid to use contrastive analysis to draw L2 learners' and teachers' attention to the unique features of collocations, it does not seem valid to use cross-linguistic differences as evidence or reason for viewing collocations as arbitrary lexical units. Such a conclusion overlooks two important facts. The first is that often a lexical item "does not have a single, fixed meaning but rather an array of senses related in principled ways to its prototypical value" (Langacker, 2008, p.72). So a lexical item in a collocation that may appear strange based on its core or prototypical meaning may be entirely sensible when viewed in one of its related senses, a point I return to later with examples. The second fact is that a vocabulary item may be semantically gridded differently in different languages; that is, its semantic mapping may vary from language to language. Thus the collocations in the target language that appear arbitrary from the perspective of a learner's L1 can be completely sensible, based on the semantic grids or networks of its lexical items in the target language.

It is a well known fact that, whereas a word may often have the same core or prototypical meaning in two different languages, its extended or peripheral meanings can differ substantially. For example, although the word

run has the same core meaning of *fast motion* in both English and Chinese, it boasts a much more extended semantic mapping in English than in Chinese. The word has, among others, the following extended meanings in English that are absent in Chinese: (1) to function, for example, "The program or computer runs perfectly"; (2) to manage, for example, "run a company"; (3) to campaign, for example, "run for president." The opposite is true, however, with the semantic mappings of the word *open* in Chinese and English. Its semantic mapping is much broader in Chinese than in English. In Chinese, *open* can express, among others, the following meanings that are not found in English: (1) to turn something from an *off* status to an *on* (operating) status, for example, "open a light or computer"; (2) to operate equipment, for example, "open a machine" (not in the sense of taking it apart); (3) to conduct or run, or example, "open a meeting or lecture" (not in the sense of beginning a meeting or lecture, a use that is also found in English). Thus, if the collocation patterns of a word based on its semantic mapping in a given language are examined, it is often found that such patterns are sensible, that is, not arbitrary or at least not entirely. One more reason, a very important one, for employing this intralinguistic perspective to examine whether a collocation is arbitrary is that it may help language learners and teachers understand its semantic motivations, which in turn can help them better grasp it. It is very important to note, however, that, in arguing for using intralinguistic semantic analysis to understand and determine collocations' motivations, I do not mean that it is not valid to use contrastive analysis to help learners notice cross-linguistic differences in collocation patterns. Such analysis is valid, but it is not enough. Students need to know and will benefit from knowing why the words in L2 collocations collocate the way they do.

DATA SELECTION

Selection of Collocation Dictionaries and Textbooks

The materials examined in this study are all the collocation dictionaries and textbooks currently available: Benson, Benson, & Ilson's (1997) *BBI Dictionary of English Word Combinations*, Crowther, Dignen, & Lea's (2002) *Oxford Collocations Dictionary for Students of English*, and Hill & Lewis' (2002) *LTP Dictionary of Selected Collocations*, and McCarthy & O'Dell's (2005; O'Dell & McCarthy, 2008) collocation textbook series. The reason for including only two textbooks (the two in McCarthy & O'Dell's series) is that they are

the only existing collocation textbooks — very popular ones, though — produced by one of the most prestigious publishers in language teaching and written by renowned authors. These four publications (with the two textbooks in McCarthy & O'Dell's series considered as one) are examined to see not only what types of collocations they include but also how they present collocations for teaching and learning, information that helps researchers understand how collocations are actually taught. Research articles and Web sites offering collocation learning activities are also examined for how they present collocations for teaching and learning.

Selection of Collocation Items for Examination

Because of space limitations, it is not possible to scrutinize all the collocation items in all four publications but a review shows that most of them are not arbitrary. Thus, selecting some examples is necessary. The collocations in the noun entries of *ability*, *work*, and *trip* are chosen for analysis for the following reasons. First, although the collocation items in these publications are primarily noun and verb based, noun entries appear to be much more predominant, outnumbering the verb entries, especially in the *LTP* and the *Oxford Collocations Dictionary*. In fact, the *Oxford Collocations Dictionary* does not have entries for any of the common verbs, such as *do*, *have*, *make*, and *take*. Second, *ability* and *work* are selected because *ability* is the first and *work* is the last noun entry found in all three dictionaries (they are also in McCarthy & O'Dell's textbook series but not the first or last noun entries in it). In other words, they were not selected arbitrarily but for their representativeness (i.e., included in all four publications). The reason for selecting the collocates of *trip* is as follows: Like the other two nouns, *trip* is an entry found in all four publications; more importantly, as is shown in the analysis, unlike *ability* and *work*, it has a few seemingly arbitrary collocations — *make/take/have a trip* — and, furthermore, the verbs in these seemingly arbitrary collocations are some of the most frequently used collocation-making verbs. In this sense, they have special representative value for the issue of arbitrariness being examined.

These seemingly arbitrary collocations (i.e., *make/take/have a trip* collocations) and *powerful car/strong tea* are then used for corpus-based cognitive analysis to determine their arbitrariness. The reason for including *make/take/have a trip* for such a close analysis is fourfold. First, verb-noun collocations are one of the most common type of collocations and the focus of most studies on the teaching of collocations (Bahns & Eldaw, 1993; Chan & Liou, 2005; Nesselhauf, 2003). Second, *make/take/have a trip*

is one of the few verb-noun collocations where multiple verbs appear to be used interchangeably; it is very interesting to know whether the verbs are indeed interchangeable in meaning, that is, whether the choice of them is unmotivated. Third, as already mentioned, *make*, *take* and *have* are three of the most frequently used verbs in English, especially as delexicalized verbs that form numerous verb-noun collocations. Fourth, it is assumed that verb-noun collocations formed with delexicalized verbs "tend to be semantically unmotivated" (Chan & Liou, 2005, pp.235–236); it is very important to test this assumption in the case of *make/take a trip*. The reason for including *powerful car/strong tea* is twofold: (1) they are adjective-noun collocations, and (2), more importantly, they have been repeatedly used, even fairly recently, as examples to show the arbitrary nature of collocations (e.g., Hunston, 2002, p.68; Smadja & McKeown, 1991, p.230). Testing their arbitrariness is thus especially meaningful. In the analysis of these classic examples, I also briefly examine one other pair of arbitrary collocations: *strong wind* versus *heavy rain*.

Corpora Used

The main corpus used for the study is the 360-million-word Corpus of Contemporary American English (COCA) developed by Mark Davies (2008) of Brigham Young University (the corpus has grown to 400 million words since the completion of my data analysis with the 2008 and 2009 data added). It is chosen for its free online access; its large size, with comprehensive and representative data covering spoken English, fiction, magazine and newspaper articles, and academic writing (no L2 data, though); the contemporariness in its data (1990–2008); and its powerful, multifunction, and user-friendly search engine. The World Wide Web and the 100-million-word British National Corpus (BNC; a mega corpus with a data structure very similar to that of the COCA) have also been used in a few instances to make sure the findings from the COCA data are not merely idiosyncratic usages of American English (when or how they are used are explained in the data analysis section).

DATA ANALYSIS AND DISCUSSION

Verb Collocations with "Ability/Work/Trip" Listed in the Four Publications

First, I compiled all the verb collocates of each of the three nouns listed in the four publications and the results are reported in Table 1. For each noun,

a few of the verbs appeared in all four publications but most in only one, with some appearing in two or three. An examination of the collocates suggests that, in the case of the collocates of *ability* and *work*, none appears actually arbitrary. The collocates of *ability* all fall neatly into a few very sensible semantic groups, for example, with *demonstrate*, *display*, *exhibit*, and *show* all expressing the meaning of showing *ability*, whereas *assess*, *measure*, *overrate*, and *underrate* convey the meaning of measuring *ability*. Similarly, the collocates of *work* also fall into sensible semantic groups. The only items that may appear arbitrary are those phrasal verbs like *carry out*, but this is a different issue because, if a person understands that one of the meanings of *carry out* is doing or performing, then its collocation with *work* is perfectly sensible. In the case of the collocates of *trip*, most of them do not sound arbitrary either (e.g., *arrange*, *cancel*, *extend*, *plan*, *organize*, and *postpone* a trip), but there are a few (*have*, *make*, and *take* a trip) that may be considered somewhat arbitrary, especially from a cross-linguistic perspective. To determine whether they are truly semantically unmotivated, however, calls for a close corpus-based cognitive analysis, which is done later. The most important evidence that most of the verb collocates of the three nouns are not arbitrary is not the finding that they all fall into sensible semantic groups, however, but the fact that the collocates of a noun in a given semantic group are largely interchangeable with no or little change in meaning, as shown in the case of the *showing ability* group: Any one of the verbs *demonstrate*, *display*, *exhibit*, or *show* conveys basically the same meaning when collocated with *ability*. This fact suggests that they are not arbitrary collocations, because one of the main arguments about the arbitrariness of collocations (e.g., Lewis, 2002; Nesselhauf, 2003) is that a (true) collocation does not allow its collocate(s) to vary freely, at least not so extensively.

Table 1: Distribution of the verb collocates of *ability/work/trip* in the four publications

Verb Collocates	Noun	Number of the Publications They Appeared in
demonstrate, have		4
recognize		3
appreciate, develop, show	ability	2
acquire, assess, display, encourage, exhibit, foster, lack, lose, measure, nurse, overrate, stifle, underrate, use		1

(continued)

Verb Collocates	Noun	Number of the Publications They Appeared in
do	work	4
carry out, complete, go to, have, lose, stop		3
begin, find, finish, get, get to, seek, take on, undo		2
arrive at, be engaged in, be off, commence, continue, create, embark on, get down to, go about, halt, leave, look for, make, need, neglect, oversee, produce, quit, set about/to, start, supervise, take off from, undo		1
take	a trip	4
arrange, cancel, go on, make, organize, plan,		3
have		2
be back from, be on, book, come back from, cut short, embark on, extent, postpone		1

Take a Trip vs. Make a Trip vs. Have a Trip vs. Do a Trip

To search for all the tokens of the *verb+trip* structure in the COCA, I entered for query "[v*] a trip" and "[v*] a * trip." The search yielded 598 tokens of *take a* or *an* (adjective) *trip* (including all the tense or aspect forms of the verb; of the 598 tokens, 199 contained an adjective, e.g., *take a fishing trip*); 331 tokens of *make a* or *an* (adjective) *trip* (with 189 containing an adjective); 151 tokens of *have a* or *an* (adjective) *trip* with 141 containing an adjective; and 13 tokens of *do a* or *an* (adjective) *trip* with 10 containing an adjective. The results indicate that *take a trip* and *make a trip* constitute the typical collocations for expressing the idea of *to go on a trip*. However, *have a trip* also has a substantial number of tokens, and it is included in two of the four publications, but a close look at its token suggests that it has a uniquely different meaning. It has a very low frequency when used without an adjective but boasts a fairly high frequency when used with an adjective. A close reading of its tokens indicates that 77 of the total 141 (a little over one-half) were used as an expression of good wishes for a safe or good trip (e.g., *have a wonderful trip*). In other words, *have* here means *to experience* or *enjoy*, a meaning that is found in its semantic mapping based on the *OED*. In fact, the majority (86%) of the *have a trip* tokens are used to convey this meaning. Thus, in general, the meaning of *have a trip* differs from that of *take/make a trip*.

Before I discuss *do a trip*, the collocation with the lowest frequency in the set, let me examine the use of *take a trip* and *make a trip*. Are the two collocations really synonymous? A close reading of the tokens in concordance lines suggests that the answer is no. Whereas *take a trip* is used often for a trip of leisure, *make a trip* is typically used for a business trip or a trip that appears particularly purposeful and effortful from the speaker's point of view. The following examples from the COCA help illustrate the point.

Examples of *take a trip*

1. ... she *took a trip* to England in 1877 for a much needed rest.
2. On one day, we *took a trip* to Rainbow Bridge National Monument, the largest natural bridge in the world.
3. Two judges from Louisiana recently *took a trip* to Hong Kong and Bangkok and charged it off to the taxpayers of Louisiana.

Examples of *make a trip*

4. You'll probably have to *make a trip* to the assessor's office to get this much detail ...
5. President Bush *made a trip* to Capitol Hill to meet with Senate Republicans and try to change some minds.
6. This past fall when three of however [sic] U.S. Congressman *made a trip* to Iraq they caught a lot of flak for it.

The difference between the two collocations can also be seen in their tokens with an adjective. Of the 199 tokens of *take a* or *an* (adjective) *trip*, the most frequent token was *take a field trip* (to a museum, show, etc.), with 25 tokens (one eighth of the total number of tokens). Furthermore, the adjectives used in many of the remaining tokens were leisure-related, such as *boat*, *train*, *holiday*, *sightseeing*, and *fishing*. In contrast, none of the 189 tokens of *make a* or *an* (adjective) *trip* contains a leisure-related adjective, and the token with the highest frequency in this group is *make a special trip*, with 25 occurrences (more than one eighth of the total). By the meaning of the word *special*, a *special trip* must be one made with some unusual purpose or effort. A quick check of the BNC shows similar patterns in British English: The most common adjectives for *take a* trip* are *day* and *boat*, whereas the most common one for *make a* trip* is *special* and for *have a* trip* is *nice*.

Based on this semantic difference between *take a trip* and *make a trip*, one can say that the verb choice in each collocation is not arbitrary but is motivated by its core meaning. Certainly, neither verb here is used in its core sense; instead, they are both used in the sense of to accomplish/

perform (*OED*), one of the extended meanings found in the semantic mapping of each verb. Yet, shaped by its core meaning, each verb in its collocation conveys a distinct meaning of its own. It is known that the core meaning of *make* is *to create*, a process that is more purposeful and/or effortful than that of *grip*, the core meaning of *take*. This difference in meaning between the two verbs in fact also appears in many other collocations made up of the two verbs. It is salient in pairs such as *make* versus *take a phone call*, *make* versus *take an offer* or *deal*, *make* versus *take an issue*. In each pair, the *make* collocation suggests an action involving more planning, effort, and/or initiation. One can also find the same difference when comparing most of the other *make+noun* collocations with most of the other *take+noun* collocations: *make a* or *an decision/effort/argument/plan* versus *take a break/vacation/walk/your time*.

Now I discuss *do a trip*, a collocation in the set that is not listed in any of the four collocation publications, perhaps because of its very low frequency. It may have been considered as an idiosyncratic expression used only by some individuals, but a scrutiny of its tokens seems to suggest that *do a trip* often conveys a unique meaning — the meaning of *complete* a trip, especially in the sense of completing a trip as an achievement, as can be seen in the following COCA examples and as evidenced by the fact that 8 of its total 13 tokens are in the past tense:

7. We just *did a trip* to Central America.
8. Each summer, we *do a mission trip*.
9. My wife and I *did a 9,200-mile trip* around the country in 1991 ...

Apparently, replacing *do* in any one of the three sentences with *make* or *take* would result in a loss of its semantic focus on the trip as an accomplishment. This use of *do* in this collocation is not arbitrary, however, because, according to the *OED* (online), to accomplish, complete, finish, bring to a conclusion is one of the key meanings of the verb, a meaning perhaps best shown in the popular utterance: "We *did* it!" It is thus fairly safe to conclude from the earlier analysis that the *make/take/have/do a trip* collocations are not arbitrary but semantically motivated.

Of course, as mentioned in the literature review section on the arbitrariness of collocations, some linguists, especially those of the Firth-Halliday-Sinclair school, argue that the meaning of a collocation does not come from its individual components but arises out of the collocation in and of itself. In their view, a word in isolation does not really have

a meaning and, hence, there is no such thing as the core meaning of a word. Yet, according to cognitive linguists and the results of the corpus-based cognitive analysis of the collocations done in this article, the choice of words in collocations is not random in general but is motivated by the lexical items' semantics, including their core meanings. Otherwise, why does the combination of *make* and *a trip* result in a collocation referring to a trip that is more purposeful and effortful than *take a trip*, not the other way around? Similarly, as is shown later, the choice of the lexical items in *powerful tea/strong car*, and so on, is also motivated by their semantics.

Strong Tea vs. Powerful Car

Regarding this well-known pair of collocations, I first tested whether they are truly established habitual collocations by querying the COCA. I searched not only for *strong tea* and *powerful car* but also for what were considered impossible collocations: *powerful tea* and *strong car*. The search produced 45 tokens of *strong tea* (17 of which were *strong*+adjective+tea) with no tokens of *powerful tea* and 21 tokens of *powerful car* or *cars*, with a surprising finding of four tokens of *strong car* or *cars*. To make sure that *powerful* was indeed not used at all with *tea* and that the four tokens of *strong car* were not some extreme cases of idiosyncratic expressions, I conducted an Internet search of the BNC and the World Wide Web. The results from the BNC are similar to those of the COCA, in that although there is no token of *powerful tea*, there is one token of *strong cars*. Interestingly, there are three false tokens of *powerful tea* and *strong car*; they all appeared as examples of incorrect usages in an academic article on vocabulary semantic analysis. The results from the Worldwide Web include 18 tokens of *powerful tea* with 13 being "*powerful*+adjective+tea" and 15 additional tokens of "*strong* car." Yet a close examination of the tokens in light of the meanings of *strong* and *powerful* will indicate that the collocations including *powerful+adjective+tea* and *strong car* are not really arbitrary.

First, *strong tea* versus *powerful tea* is examined. A scrutiny of the tokens shows that all the *strong tea* tokens (e.g., examples 10, 11, and 12) refer to the taste or smell of the tea, whereas those of *powerful tea* concern the force or effect of some herbal tea (examples 13, 14, and 15).

10. Kai ... went into the main room to make herself a bracing cup of *strong sweet tea*.
11. The heady odor of *strong tea* filled the kitchen.
12. For the first time, I noticed the smell of *strong beef tea* ...

13. Poppy pod tea has been used as an old time *powerful tea with many medical purposes.*
14. This is a very *powerful immune boosting tea.*
15. Wild Power Tea is a *powerful nutrient-rich cleansing tea.*

The distinctive meanings of *strong* versus *powerful tea* make very good sense, based on core meanings of the two adjectives. According to the *OED*, *strong* can express the meaning of a high degree in flavor, smell, and taste, a meaning that is not in the semantic mapping of *powerful*. On the other hand, one of the core meanings of *powerful* is "producing great effect or reaction," the very meaning used in the tokens of *powerful tea* (although *strong* also has this meaning, it is not as intense as *powerful* in expressing the meaning).

As for why both *powerful car* and *strong car* were found as results, the question can also be answered in light of the semantic mappings of the two adjectives. When the expression "powerful car" is used, the meaning is that the car has a powerful engine that is capable of producing great force, as can be seen in the following COCA example:

16. Only a *powerful car* can race uphill or overtake another without the gas pedal being fully depressed and emissions at their worst.

This use of *powerful* in *powerful car* makes perfect sense because "being capable of exerting great physical force" is one of the core meanings of this adjective, a meaning that is not clearly present in the semantic mapping of *strong* where the closest meaning is "exerting great muscular force" (*OED*, underline added). This adjective "muscular" suggests that *strong* typically describes a human being or animal (not a machine) that can produce great force. Then why do people sometimes say *strong car* as shown in the corpus examples I found?

A reading of the 20 tokens of *strong car* or *cars* shows the following usage and meaning distributions. Nine (a little less than one half) of the tokens were used in writings about racing cars or car racing; six were used in the captions of Internet video clips showing cars and trucks that were either indestructible by very strong force or able to survive running in extremely rough driving conditions; four tokens were used in articles about the quality of some car models. The remaining token was in an article talking about how it was now possible to use plastic material to build *strong* cars. It is obvious that *strong car* used in this latter article and in the captions of the six Internet video clips refers to cars that were solidly made, capable of supporting strain or withstanding force; that is, it refers to the superior

structural strength of the cars involved. If this meaning of *strong car* is examined in light of the semantic mapping of the word *strong*, the use of *strong* in this sense is very logical because, according to the *OED*, *strong* may be used to describe "materials or things" that are "capable of supporting strain or withstanding force; solidly made."

Now the meaning of *strong car* is examined in the remaining 13 tokens. An examination suggests that, in some of the tokens, *strong car* appears to refer to a powerful car, but in the others it is not clear whether it means a powerful car, a solidly built car, or perhaps both, as can be seen in the following examples (examples 17 and 18 are from the COCA, Example 19 is from the BNC, and Example 20 is from the World Wide Web):

17. "The 500-mile race will be more competitive," he said. "Just one on one, I'm not sure you could pass the leader unless you've got an awful [*sic*] *strong car*. I don't plan to be the one doing the passing, though."
18. A year into my seniority, indeed, the joys of Triumph driving had started to wane. Fast car, *strong car* for its price and class, but after all, only a common Triumph. Drivers of my sophistication hankered for a more challenging machine ...
19. The Volkswagen Polo has been reborn. No longer is it the slow, old relative of a young family of quick and *strong cars*. It may have been ignored since 1981 and left to make do with just two small engines ...
20. JL Racing's Saab 9–3 is ONE *STRONG CAR* ... The car spun around four times before heading over a number of grass berms, and finally coming to a halt. Luckily Jason managed to keep the car off the wall and get the car back to pits. There was some minor damage with a bent tie-rod and the brakes had some issues, but the team were able to get things going again for Saturday's sessions.

In Example 17, because of the statement "I'm not sure you could pass the leader unless you've got an awful *strong car*," it is almost certain that *strong car* refers to the power of the car. Yet one cannot be sure what *strong car* really means in the remaining three examples. Example 20 is particularly interesting. The description about the racing car being able to finish the race after surviving the accident certainly suggests that *strong car* here implies the solid structure of the car and its ability to withstand destructive force, but it could also have two additional meanings: One referring to the power the car had shown in finishing the race, and the other, a metonymic use, meaning a car that is a *strong contestant* or *strong contender*, that is, one with a *strong chance* of winning. The fact that *strong car* has now been used in

the sense of *powerful car*, as shown in a few of the corpus examples, suggests that perhaps a semantic conflation of *strong* and *powerful* in reference to the power of a car is taking place, especially in the context of car racing. Some speakers seem to have now expanded the meaning of *strong* from "capable of exerting muscular force" to capable of exerting non-muscular physical force. Such a semantic shift is not entirely arbitrary, though, because *strong* used in this sense still means "capable of producing physical force," although no longer force produced by muscles.

In fact, the semantically motivated use of *powerful/strong* in collocations can also be seen in the findings of a corpus study on the use of *powerful supporters* versus *strong supporters* reported in Church & Mercer (1993): Whereas *strong supporters* refers to those "who are enthusiastic, convinced, vociferous, etc.," *powerful supporters* typically means those "who will bring others with them" (p.20). The reason for the different use is not difficult to see, because to be a *powerful supporter* or to bring many others along, one has to have *power*, be it political, economical, or some other power. It is now clear that the use of *powerful car* and *strong tea*, together with the newly discovered uses, is not really arbitrary but semantically motivated.

Furthermore, a cognitive analysis of *strong wind* versus *heavy rain*, another still widely used classic example for showing the arbitrariness of collocations (e.g., Keshavarz & Salimi, 2007), shows that they are not really arbitrary, either. As is well known, rain is made up of water and, as such, it has weight. Therefore, the use of *heavy* to modify rain makes perfect sense. In contrast, wind has basically no weight, but it has force. Hence, the use of *strong* to describe wind is entirely logical. The two collocations are obviously very semantically motivated based on human experience. In short, all the earlier analyses indicate that most of the collocations in the reference and teaching materials, including even those often considered arbitrary, are in fact motivated. Such a finding is in line with cognitive linguists' argument that "linguistic structure is a direct reflex of cognition in the sense that a particular linguistic expression is associated with a particular way of conceptualizing a given situation" (Lee, 2001, p.1).

Dominant Practices in Collocation Teaching

The preceding data examination has demonstrated that most collocations are not arbitrary but motivated. Therefore, an analysis and understanding of their motivations should help students better grasp them; that is, collocations should not be taught only as fixed lexical units.

However, as shown in the section on the arbitrariness of collocations, many language educators (e.g., Hill, 2000; Lewis, 2000, 2002; Palmer, 1933) insist that collocations are arbitrary and that they should be taught as lexical chunks without any compositional analysis. If such a view is widely held and practiced, then changes should be made. It is thus necessary first to determine the dominant collocation teaching practices currently being used. To this end, I examined, in addition to the four dictionary-textbook publications already mentioned, the articles in Lewis' (2000) edited book on collocation teaching, the section on collocation teaching in Nation's (2001, pp.335–343) and Willis' (2003, pp.142–167) books, three published studies on collocation teaching in which the learning and teaching activities were described (Chan & Liou, 2005; Sun & Wang, 2003; Webb & Kagimoto, 2009), and three Web sites that offer collocation learning and teaching activities (Kisito, 2010; Macmillan English Campus, n.d.; Snashall, n.d.).

The results of the examination suggest that collocations are currently taught primarily as fixed units, because most of the teaching activities, including cross-linguistic comparison, are noticing-memorization in nature, although a few experts (Nation, 2001; Willis, 2003) recommend different learning techniques or methods for different types of collocations. For example, Nation (2001) suggests studying their parts and history for learning idioms (for Nation, collocations include idioms), finding patterns for collocations of some unpredictability (e.g., *take medicine*), and paying attention to individual parts for "very predictable collocations" like *a clear day* (pp.335–336). Willis (2003) recommends organizing collocations by their meanings. Yet, overall, the most widely used activities are the noticing-memorization type. They include, among others, identifying or marking collocations in a passage or in collocation dictionaries; reading passages with collocations highlighted or marked; filling in the blanks with the right word in a collocation; choosing or matching correct collocates; translating collocations from L2 back into L1 or vice versa; and memorization-type activities like repetition and rehearsal (Hill, Lewis, & Lewis, 2000).

Recently, corpora, especially corpus concordancing, have been used to help learners learn collocation patterns but their use has been limited to the function of exposing students to and helping them notice and identify collocations (Chan & Liou, 2005; McCarthy & O'Dell, 2005; Sun & Wang, 2003; Woolard, 2000). It does not involve any analysis of the reasons that words in collocations collocate the way they do. In fact, my research failed to find any semantic-analysis collocation learning activities that aim to find

motivations of collocations, with the exception of one activity in McCarthy & O'Dell's (2005) book. In a unit titled "Everyday Verbs 1," which focuses on a comparison between the *make* collocations and the *do* collocations, McCarthy & O'Dell (2005, p.18) write, "If you remember that the basic meaning of *make* is about producing something and the basic meaning of *do* is about performing an action, then the collocations on this page may seem more logical." Such an explanation should help students better understand and grasp the collocations of the two verbs. Unfortunately, the earlier quote appears to be all that the two authors offered about the motivations behind the collocations in their entire series. For instance, in the next two units after "Everyday Verbs 1" (i.e., in "Everyday Verbs 2" and "Everyday Verbs 3"), in which collocations of some other common verbs (e.g., *get*, *go*, *have*, etc.) are introduced, there is no discussion at all about the issue of motivation behind any of the collocations of the verbs involved. In other words, O'Dell & McCarthy's (2008) discussion about the motivations of collocations is indirect and inadequate. This inadequacy might result from their belief that most of the collocations in their series are "not predictable," for they stated in the advanced book (p.8) that, in their series, they "pay most attention to those [collocations] that are not predictable." The phrase "not predictable," as I explained earlier, is largely synonymous with *arbitrary* in this context. Yet, as I have shown in my data analysis and show again in the next section, most collocations, especially those in the existing collocation dictionaries, are not arbitrary, at least not completely.

INCORPORATING A CORPUS-BASED COGNITIVE ANALYSIS IN THE LEARNING AND TEACHING OF COLLOCATIONS

Rationale

The earlier examination has shown that, although collocations are generally not arbitrary, they are currently taught mostly as prefabricated chunks using primarily noticing-memorization strategies. This noticing- and memorization-only approach is problematic not only because it ignores the motivated nature of most collocations but also, and more importantly, because it takes away from the study of collocations any cognitive and linguistic analysis, a very important and useful part of the language-acquisition process. Wray (2000) has identified this problem in the lexical approach to the teaching of formulae: It does not allow students to generalize what they learn. Furthermore, such a learning practice runs

against new findings and theories in cognitive linguistics about language use and learning. According to the cognitive linguist Langacker (2008),

> ... conventional usage almost always has conceptual motivation. Though it has to be learned, it represents a particular way of construing the situation described. With proper instruction, the learning of a usage is thus a matter of grasping the semantic "spin" it imposes, a far more natural and enjoyable process than sheer memorization [underscoring added].

Based on such a belief about language usage and learning, cognitive linguists have been very critical of the traditional practice of treating language primarily as an arbitrary system:

> ... language has traditionally been understood as operating under its own set of rules and properties, most of which have been assumed to be largely arbitrary, idiosyncratic, and mysterious ... Lexical items with multiple meanings are presented as homophones, with virtually no attempt to demonstrate any motivated connections among the meanings. (Tyler, 2008, p.458)

This criticism is especially valid for the current collocation teaching practice. Changes are needed.

In fact, and more importantly, recent research has shown strong positive effects of cognitive analysis on the learning of some fixed expressions, such as figurative phrasal verbs and idioms (Boers, 2000; Kövecses & Szabó, 1996). In an experimental study, Kövecses and Szabó taught two groups of English as a foreign language students phrasal verbs made up of the particles *up* and *down* (e.g., *move up*, *go up*, *cut down*, *die down*). The students in the experimental group were made aware of the conceptual metaphors that motivate the phrasal verbs, such as *more is up* and *less is down*. The students in the control group learned the phrasal verbs without exploring the motivating conceptual metaphors. The results indicate that the experimental group significantly outperformed the control group on the achievement test. Boers (2000) reports similar findings in an experimental study involving phrasal verbs as well as other figurative expressions. In fact, cognitive analysis can also enhance students' learning of other difficult aspects of language. In a study on the learning of the preposition *over*, Tyler (2008) also reports results of experimental studies that exhibit positive effects of cognitive analysis on students' learning of lexicogrammatical items. Furthermore, corpus-based cognitive analyses have become an increasingly useful approach in the research

on lexicogrammar and have yielded many new insights into lexical and syntactical usage patterns valuable for language learning (e.g., Gries & Stefanowitsch, 2006; Grondelaers, Geeraerts, & Speelman, 2007).

Given these research findings and the fact that collocations are generally motivated, researchers can expect that a cognitive analysis will assist students in grasping collocations more effectively. Before I continue, it is paramount to note that I am not suggesting that collocation noticing, exposure, and memorization activities should be replaced with cognitive analysis. I am only arguing for adding such analysis. Although I see strong benefits of cognitive analysis in learning collocations, based on the new research findings, I also understand the need for students to notice, memorize, and repeatedly practice collocations to attain a good grasp of them and a better English proficiency as a whole. Later, I use just a few specific examples to show how incorporating such an analysis in the corpus-based study of collocations may enhance students' learning. The corpus I use is again the COCA. There are, of course, other useful free online corpora, including the BNC via the Brigham Young University interface and the WebCorp (Birmingham City University, RDUES, 2009). Teachers and learners can choose which one to use based on the learning purpose, context, and setting.

Examples of Corpus-Based Cognitive Analysis and Useful Strategies

I will begin with the collocations of *make*, *take*, *do*, and *have* as shown in Table 2. These collocations are chosen because the four verbs are common verbs or "everyday verbs," a term used by McCarthy & O'Dell (2005, pp.18 and 22) when they discussed and listed the collocations of *make*, *do*, and *have* (without *take*). Table 2 drew some information from McCarthy and O'Dell's lists, but most of the collocations listed in the table are based on my search of COCA.[2] Because the selection of the collocations was corpus-based, no corpus search is needed for the students. Only some cognitive analysis should be done. The only cognitive semantic analysis included in McCarthy & O'Dell's (2005) textbook is the statement already cited above, i.e., "If you remember that the basic meaning of *make* is about producing something and the basic meaning of *do* is about performing an action ..." (p.18). While the statement is helpful, more meaningful analysis can be done to help students better differentiate the semantic and usage patterns between the two verbs.

Table 2: Typical collocations of everyday verbs

Make	Take	Do	Have
Make a change/changes	*Take a break*	*Do drugs*	*Have an accident*
Make a choice	*Take a bus/taxi*	*Do exercises*	*Have an argument*
Make a comment/(s)	*Take a chance*	*Do someone a favor*	*Have a break*
Make a contribution to	*Take a look*	*Do harm*	*Have a conversation*
Make a decision	*Take a nap*	*Do your hair*	*Have difficulty*
Make an effort	*Take an offer*	*Do your homework*	*Have a dream*
Make an excuse	*Take a rest*	*Do the ironing/shopping*	*Have an experience*
Make a friend	*Take a phone call*	*Do laundry*	*Have a feeling*
Make an improvement	*Take a shower*	*Do some work*	*Have fun/a good time*
Make a mistake	*Take a test*	*Do your best*	*Have a look*
Make a phone call	*Take your time*	*Do damage*	*Have a party*
Make progress	*Take a walk*	*Do an experiment*	*Have a problem/s*

For example, we can ask students to discuss which verbs' collocations (the actions expressed) involve more initiation, planning, and effort. It should not be difficult for them to figure out that the collocations of *make* do, e.g., *making changes/choices/contributions/decisions/an effort/friends* typically entails more initiation, planning, and effort than *doing exercise/a favor/hair/homework/the ironing/shopping* as the latter actions are much more routine and often they are things that one is asked/required to do. Then having students examine the core meaning of *make* should help them understand the differences between the two verbs' usage patterns because the core meaning of *make* is *create*, an activity whose process involves a substantial amount of initiation, planning, and effort, much more so than the verbs *do* and *take* and their collocations (*do chores/dishes/errands; take a break/bus/nap*). Now the unique semantic features of the *have* collocations are discussed. No semantic analysis about them is included in the textbook, perhaps because of the authors' belief that many of the collocations are "surprising," that is, unpredictable (McCarthy & O'Dell, 2005, p.22). Yet the fact is that the *have* collocations are not surprising, and some interesting analysis can be effectively done to help students understand why they are so used. For example, as my analysis of the *Have a good/wonderful trip* collocation in the last section indicates, one of the main meanings of *have* collocations is "experience." In fact, almost all the *have* collocations in McCarthy and O'Dell's list express this meaning, for

have in them can be replaced by *experience*: *experience* (instead of *have*) *a/an accident/break/difficulty/dream/feeling/fun/problem*, etc. To draw students' attention to this fact, the researcher can ask the question: "What does the verb *have* really mean in these collocations?" and they should not have much difficulty answering it. An understanding of this point should in turn help them better distinguish the *have* collocations from the *make* and the *do* collocations.

A cognitive analysis may help students better grasp the use of *be/get on* (not *at/in*) *the phone*, a *verb+preposition+noun* collocation. The reason for choosing this collocation is that many of my students have asked me why one says *on the phone*, not **at/in the phone*. It seems rather arbitrary to them. To help students understand that this is really a motivated usage, researchers can first have students conduct a COCA search of the prepositions used in the phrase by entering "[be] [i*] the phone" and "[get] [i*] the phone." The results show that the only prepositions used systematically in the given collocations are *on* and *off* with 1,118 tokens of *be on the phone*, 262 *get on the phone*, 17 *be off the phone*, and 202 *get off the phone*. Then students can be asked to compare the meanings of the four different collocations, especially the meaning of *on the phone* versus that of *off the phone*. The students can fairly easily determine that *be on the phone* means "be in the process of having a phone conversation" and *get on the phone* means "pick up the phone to start a conversation," whereas *be/get off the phone* conveys the opposite meaning. Then, one should ask the students why *on* and *off* help convey opposite meanings. By checking the meanings of the two prepositions in the dictionary, they learn that one of the extended meanings of *on* is "being in operation/use" (a meaning that is not in the semantic mappings of *upon*, *at*, etc.), and one of the extended meanings of *off* is "not being in operation/use." This knowledge should enable the students to see the motivations for the collocations involved.

Finally, there are some useful collocation learning and teaching strategies that incorporate corpus-based cognitive analysis. Here are a few:

1. Comparing/contrasting/explaining differences between similar pairs of collocations (e.g., *make/take/have a trip* and the typical *make* vs. *take* vs. *have* vs. *do* collocations);
2. Examining the motivations of collocations in comparison or contrast with their counterparts in learners' L1 (when learners have a homogeneous L1), for example, *take medicine* in English versus *eat medicine* in Chinese. The

English use of *take* here can be attributed to the broad semantic mapping of the verb and its extended meaning of "to receive into one's body" by eating, drinking, swallowing, for example, *take food, nutrition*, etc. (*OED online*), whereas the Chinese use of *eat* is quite understandable, thanks to its extremely broad semantic mapping in Chinese, for example, *eat a loss* (suffer a loss) and *eat bitterness* (endure hardship).

3. Making good use of corpora and dictionaries (both general learner dictionaries and collocation dictionaries) in identifying collocations and learning their motivations.
4. Organizing collocations by meaning based on semantic motivations rather than in an undifferentiated way.

Benefits

Besides helping learners better understand collocations, corpus-based cognitive analysis can also help learners use collocations more productively than the noticing-memorization approach can. This is because there are simply too many collocations to memorize; for example, learners cannot memorize all the collocations with the verbs *make* and *have* mentioned earlier. Knowing the different motivations for the typical collocations of the two verbs may help students understand and use the verbs more accurately. Of course, because not all the collocations are motivated, at least not clearly motivated, sometimes a search for the motivation(s) for a collocation may fail. Yet, despite the failed attempt, the cognitive exploration process that the students went through should still be beneficial, because of the additional opportunity for processing the collocation and the extra attention the students paid to its composition. The exploration process should raise students' consciousness of the collocation, which should in turn result in better retention. Another likely positive value of a cognitive analysis in the learning of collocations is that it may not only enhance students' grasp of the collocations being learned but also enable students to gain a better understanding of the key words in the collocations. For example, in the process of gaining an understanding of the semantic motivations of *make a trip* versus *take a trip*, the students should simultaneously learn, explicitly or implicitly via corpus examples, the core meanings of the two verbs involved, which can in turn lead them to a better understanding of the *make+noun* collocations versus the *take+noun* ones in general. By the same token, a corpus analysis of *chief+noun* and *main+noun* collocations may enhance

students' grasp of the core meanings of the two adjectives and their overall usage patterns.

Caveats and Challenges

It is paramount to note, however, that there are many caveats and challenges in the use of corpus-based cognitive analyses in collocation teaching. First, the approach will not work well for young children because of their limited cognitive ability. Second, it may not work for students who do not benefit from cognitive analysis because of their learning styles. Third, the approach should be used cautiously with students of low language proficiency. For these students, raw corpus data should be avoided. Instead, the teacher can select, from the raw data, examples that suit the students' level and ability. Fourth, the level of complexity of cognitive analysis in collocation learning can vary substantially from one collocation to another, thus presenting different levels of challenge. For example, the reason for the use of the preposition *between* in the collocation *a gulf between a and b* may be somewhat easier to understand than the reason for the use of *on* in the collocation *be on the phone*. Although the core meaning of the preposition *between* is used in the *gulf between* collocation, it is not the case with the use of *on* in *on the phone*, as explained earlier. Because of the difference in the complexity of cognitive analyses involved in collocation learning, a teacher should be prepared to provide appropriate assistance to the students, based on the level of the difficulty of the collocations being learned. Visual aids including diagrams are an especially useful tool. For example, to help students understand the use of *between* instead of *in* or any other prepositions in the *gulf between* collocation, one can draw a picture with a gulf (lake/river) in the middle and the A person/thing on one side of the gulf and the B person/thing on the other side. Viewing this picture, students can see clearly the reason for using *between*, rather than one of the other prepositions. Similarly, a diagram can be drawn to help illustrate the semantic difference between the *high*- and *tall*-specific collocations.

CONCLUSIONS

Using a cognitive analysis of some collocations in corpus data, this paper has attempted to demonstrate that most collocations in the existing collocation dictionaries and textbooks, including even many of those traditionally considered arbitrary, are motivated if viewed in light of

the semantic mappings of the key lexical items involved. Based on this finding about the nature of collocations, new research findings on the positive effects of cognitive analysis on the learning of lexical items, and cognitive linguistic theories about language use and learning, the paper has argued for the need to include a cognitive analysis in the learning of collocations in addition to noticing, memorization, and other appropriate learning activities. It has also discussed with examples how such an analysis may not only help students grasp collocations more effectively but also enable them to gain a better understanding of the meanings and usages of the key words in the collocations. The article has addressed the caveats and challenges in using the proposed teaching practice. Obviously, empirical research testing the effectiveness of including cognitive analysis in collocation teaching is the logical next step. Such research is necessary not only in helping us gain a better understanding about the teaching of collocations but also about the value of a cognitive approach to language teaching in general.

Notes

1. For example, the overview will not cover recent psycholinguistic and natural language processing research. Although such research has provided evidence for the existence of certain combinations of words as lexical units, it does not have direct bearing on the issue I am addressing in the paper: whether collocations are generally arbitrary.
2. In fact, all of the collocations of *take* are based on my query of COCA because McCarthy & O'Dell's (2005) book did not discuss or list collocations of *take*. It is also necessary to note that Table 2 was first used in my (Liu, 2012, p.27) article.

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Part II

Describing and Teaching Difficult Lexical Usages

Chapter 9

Chinese EFL Learners' Acquisition of Culturally Loaded Words and Its Pedagogical Implications

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INTRODUCTION AND LITERATURE REVIEW

Vocabulary learning has begun to gain due attention in recent second language acquisition research. In addition to some journal articles (Ellis, 1985; Gu & Johnson, 1996; Ooi & Kim-Seoh, 1996; Read, 1993), several books have appeared on the subject in recent years (Carter & McCarthy, 1991; Coady & Huckin, 1997; Hatch & Brown, 1995; Lewis, 1993; Nation, 1990). Yet Ellis' (1985, p.5) decade-old comment about the inadequacy of research on vocabulary acquisition still seems relevant:

> Second language acquisition refers to all the aspects of language that the language learner needs to master. However, the focus has been how L2 learners acquire grammatical systems, such as negative or interrogatives, or grammatical morphemes such as the plural "s" or the definitive and the in-definitive articles. Research has tended to ignore other levels about the acquisition of lexis

So far while research on the acquisition of lexis has increased substantially on certain levels and issues such as vocabulary learning strategies and contexts, it has overlooked some other areas of concern. Acquisition of culturally loaded words, for example, is one such neglected area.

Culturally loaded words refer to those lexical items that "are similar in primary meaning [in both L1 and L2] but different in connotation" (Lado, 1972, p.286). These words should not, however, be confused with another group of difficult L2 words — those whose core meanings are also shared by their L1 counterparts but whose semantic grids differ. An example of the latter group is the verb "open." There is no difference between Chinese

and English in the core meaning of the word: "to move (something) from a closed position or to remove a cover, etc.," but the word is gridded much more broadly in Chinese than in English, for in Chinese, one may open not only doors or boxes but also lights or radios, but in English, one has to "turn on," not "open," lights or radios. Like words that differ in semantic grids, culturally loaded L2 words contain the same core meanings as their Ll counterparts. Yet unlike semantic-grid-different words, culturally loaded words may or may not share the Ll semantic grids, and, most important of all, they differ from the Ll words in their connotational meanings. One example of a culturally loaded word is the adjective "fat." The word denotes "fleshy" in both English and Spanish, but it connotes entirely different meanings. While the word is pejorative in American English suggesting being overweight and unhealthy, in Spanish, as Lado (1972, p.286) illustrates with his personal experience, it is often complimentary signifying good health. The word "pub" serves as another example. Although "pub" refers to the same kind of facility in both Arabic and English, it means, in Britain, nothing more than a place where people drink and socialize, but it suggests in the Muslim Arabic world "a place where people sin against God and morality" (Laufer, 1990, p.582). For ESL/EFL students to miss the cultural connotations of these words could easily cause serious problems in their communication with native speakers. Asian students seem particularly likely to face such problems because of the sharp cultural differences between the English-speaking countries and the Asian societies and because of the impact of the differences on lexical meanings.

A Chinese student of one of the authors was once a guest at an American family's home in the United States. Before coming to America, the student had studied and taught English in China for twelve years. One day, the hostess, who was over sixty, was decorating the house for Christmas. She was stepping on a ladder hanging lights. The student wanted to help and said, "You are old. Let me do it." The hostess became livid and responded angrily, "You think I'm old?" The student was shocked and very upset by the response, for she did not know that the word "old" which was often neutral and positive in Chinese was very negative in English. So understanding a word's cultural connotations is a very important, though difficult, part of vocabulary knowledge, a part of what Read (1993) calls "depth" of vocabulary knowledge. More attention, according to Read (1993, p.357), should be paid in L2 vocabulary learning and assessment to students' depth of knowledge (how well they

know particular words) since traditionally educators have focused mostly on learners' breadth of knowledge (how many words the students know).

Although Lado (1972) pointed out long ago the difficulty culturally loaded words would often pose to L2 learners, there has been little research on the issue. Carter & McCarthy (1991), Lewis (1993), and Nation (1990), for example, did not touch on the question in their books. Nor did any of the 14 articles in Coady & Huckin's (1997) recent comprehensive volume on L2 vocabulary acquisition research. Hatch & Brown (1995) and Laufer (1990) only briefly discussed the issue. Furthermore, most of those who did address the question based their discussion on intuition or anecdotes. Intuition, as studies (Brouwer, Gerritsen, & DeHaan, 1979; Pica, 1983; Wolfson, 1989) have shown, is unreliable and often inaccurate. There has been little empirical research directly on L2 students' learning and understanding of culturally loaded words, for, although Ijaz (1986) and Strick (1980) examined how, among other things, Ll cultural knowledge may impact on L2 vocabulary understanding, their empirical studies were not on culturally loaded words. Qi (1992) was the only one who, according to our research, examined the issue directly. Yet his research, that found significant differences between ESL speakers' and native English speakers' understanding of the connotation of culturally loaded words, was a very small case study involving a total of only four subjects.

All this has led to the present study that aims to determine empirically on a larger scale: 1) whether Chinese EFL students' understanding of selected culturally loaded words approximates that of native speakers of English, as does their understanding of other words (Zhang, 1995); and 2) to what extent EFL proficiency accounts for such approximation.

METHOD

Subjects

The study included, as a control group, 61 native English-speaking American students in a university in Oklahoma, and 125 Mandarin-speaking college students who majored in English at a university in Nanchang, PRC. Of the 125 Chinese students, 64 were freshmen and sophomores, and 61 were juniors and seniors. The 64 freshmen and sophomores were classified as intermediate-level English learners based on the fact they all had studied English for six years in secondary school before they came to college, and they all had scored high enough on the English Test of the very competitive

National College Entrance Examinations to enter the college and major in English. The 61 juniors and the seniors were grouped as advanced learners of English because they had undertaken at least two years of intensive English study at the college level. Like most other college students in China, these students were studying under the four-year system rather than the United States credit hour system. In such a year-based system, English majors who enter in the same year will take the same classes throughout the four years of college and have to pass the courses and exams and demonstrate the required English proficiency in order to be promoted to the next year/grade. Additionally, in the Chinese system, college students take at least seventy percent of the courses in their major field, which means the juniors and the seniors in question had spent most of their school time studying English in the two or three years before participating in the study.

Low-level Chinese learners of English were not included in the study because: 1) low-level EFL learners' vocabulary is very limited, and they may not know some of the words in the study; 2) vocabulary learning, as recent research (Nation, 1990; Schmitt & Schmitt, 1995; Schmitt, 1996) indicates, is incremental and involves various aspects of word knowledge. So even if the low-level students "know" all the words, their knowledge is conceivably limited to the core meanings, the type of vocabulary knowledge learners usually acquire first in their process of learning a new word. Because of their limited vocabulary knowledge, low-level students are very likely to randomly guess the appropriateness of the words, thus confounding the results of the study.

Instruments

Ten vocabulary items were selected, and a sentence was generated for each item to form a survey test (Appendix). The sentences were written in such a way that the words were fully contextualized, and the clarity of the sentences was checked and confirmed by 23 educated native English speakers who were either graduate students or faculty members at the university in Oklahoma mentioned earlier. Based on the authors' knowledge and observations about Chinese and English usage (both authors were fluent and well educated in Chinese and English), six of the words were considered inappropriate in English but appropriate in Chinese in the way they were used. These six words included "fat," "old," "waste," "propaganda," "laborer," and "politics." "Fat" and "old" traditionally contain a positive connotation for Chinese speakers. In

Chinese, putting on weight has traditionally been considered a good thing to be complimented on. The word "old" in Chinese, unlike in English where it generally has only negative connotations, can be both positive and negative. When used before pejorative nouns like "*jiahuo*" or "*dongxi*" (both derogatory words referring to a person), "old" suggests "senile" as in English, but when used to modify neutral nouns like "cadres," "workers," or "teachers," it implies "experienced," "wise," and "respectable." So one frequently hears the phrases "old cadres" and "old workers" as expressions of respect. Both Mao Zedong and Deng Xiaoping, when they were alive, were often reverently referred to as "*talaorenjia* [literally, *he old person*]." It is a great honor to be addressed by one's last name plus "*lao*," i.e., "*X Old*." One has to have held extremely high positions or to have achieved extraordinary scholarly accomplishments to be called "*X lao*."

"Waste" in Chinese often has the same negative connotations as in English, but in the context of the sample sentence, the word does not convey the usual pejorative meaning. It is common and appropriate in Chinese for one to say to the host upon leaving after an appointment, "I'm sorry to have wasted so much of your time," especially if the latter is a superior or has rendered some help to the former. The intention is to show the humility of the speaker and to show respect to the host. Such intention, as Wu & Stephens (1991) documented, is, however, often lost with English speakers who, upon hearing the remark, would feel that the visitor did not appreciate the time and the work he/she had just accomplished.

"Propaganda," "laborers," and "politics" all have rather positive connotations in Chinese for ideological or political reasons. China has a department of propaganda at almost every level of its government. "Laborer," as Xu (1987, p.70) points out, is a lofty term in socialist ideology, and it does not possess the meaning of "an unskilled working man." Similarly, "politics" is something of great honor and importance. The government officials are always calling upon the Chinese people to attach great importance to "politics" and to treat politics as the first priority in their work and life.

The other four words included in the test ("visit," "instruction," "ugly," and "stupid") were chosen as control items to avoid having the items strictly inappropriate in English and entirely appropriate in Chinese. "Visit" and "instruction" are culturally neutral words, (i.e., they do not seem to have any pejorative connotations in either language). "Ugly" and "stupid," on the other hand, are derogatory in both languages. They are thus cultural-connotation-similar words.

The subjects were asked to rate the appropriateness of these words in the sentence using a 1 to 5 scale where 1 meant the word was appropriate, and the rater would use it in the sentence; 2 meant the word was somewhat appropriate, and the rater probably would use it; 3 meant the rater was not sure; 4 meant the word was somewhat inappropriate, and the rater probably would not use it; 5 meant the word was inappropriate, and the rater would not use it.

Procedures

Pilot study: Verification of the items' cultural connotations

In order to ascertain the accuracy of the above intuitive understanding of the cultural meanings of these words, the survey questions were first given as a type of pilot study to 20 native speakers of American English who were students at the university in Oklahoma, and a Chinese version was administered to 20 Chinese students studying at the same institution. (In the main study, the EFL students in China were given the English version, not the Chinese one.)

Statistical analysis of the pilot study

The results of the pilot study were analyzed using a *t*-test to determine whether there were significant differences between the two groups' ratings on each of the ten items. The results (Table 1 and Figure 1) supported our initial understanding of all the items except for Item 2 "ugly" and Item 9 "stupid." The means of the ratings of both groups on Items 1 and 8 ("visit" and "instruction") all fell between 1.2 and 1.5, and there was no significant difference between the groups' ratings on either item. In other words, both groups considered the two words appropriate. For Items 3, 4, 5, 6, 7, and 10 ("propaganda," "old," "laborers," "fat," "waste," and "politics"), the means of the ratings of the Chinese group ranged from 1.4 to 2.75 and were all conspicuously lower than those of the American group which ranged from 4.2 to 4.8.

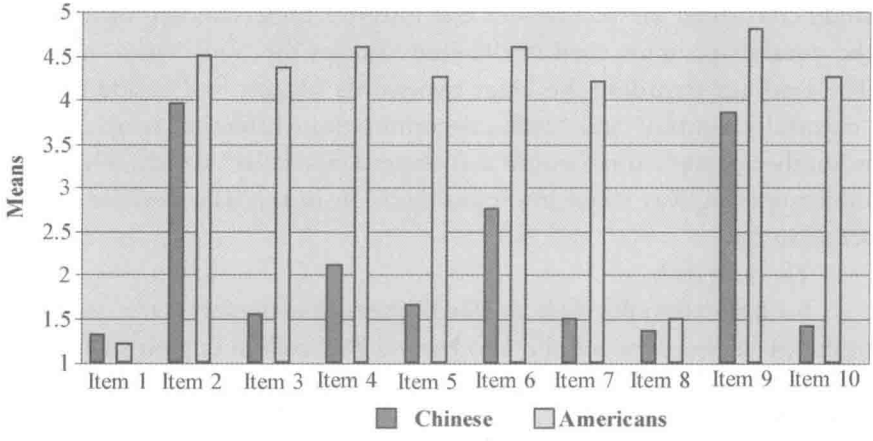
Table 1: Means, standard deviations, and *t* values of comparison between the Chinese and the Americans' ratings

Item	Chinese (N=20)		Americans (N=20)		*t*	*p*
	M	*SD*	*M*	*SD*		
Visit	1.30	0.47	1.20	0.41	0.72	NS
Ugly	3.95	0.95	4.50	0.69	2.10	0.04
Propaganda	1.55	0.89	4.35	0.81	10.41	0.0001

(continued)

Item	Chinese (N=20)		Americans (N=20)		*t*	*p*
	M	*SD*	*M*	*SD*		
Old	2.10	0.97	4.60	0.60	9.83	0.0001
Laborer	1.65	0.75	4.25	0.81	10.28	0.0001
Fat	2.75	1.29	4.60	0.68	5.66	0.0001
Waste	1.50	0.61	4.20	1.00	10.28	0.0001
Instruction	1.35	0.59	1.50	0.76	0.69	NS
Stupid	3.85	0.99	4.80	0.41	3.97	0.0005
Politics	1.40	0.60	4.25	0.85	12.26	0.0001

Figure 1: Item group means



The differences between the two groups' ratings were all statistically significant with $p<0.0001$. These six items belong clearly to the culturally loaded words, or cultural-connotation-different words.

The results on items "ugly" and "stupid" were much more complex. While the difference between the means of the language groups on both words was statistically significant, the actual mean differences were far smaller than those on the words of the previous group, i.e., the culturally loaded words. Of most importance, the means for the Chinese group were 3.95 on the word "ugly" and 3.85 on "stupid," which indicates many of them considered the words somewhat inappropriate as a 4 on the scale means somewhat inappropriate. Yet as the results of the *t*-test show, the degree of inappropriateness indicated by the Chinese students'

ratings differs significantly from that suggested by those of the Americans. Thus, the cultural connotations of these two words are not, as originally assumed, entirely similar between the two languages. Instead of being labeled cultural-connotation-similar words, they should be named as quasi cultural-connotation-similar words. This finding makes good sense because Americans, by comparison, seem much more sensitive to negative words than Chinese, thanks perhaps to the political correctness movement which has substantially increased Americans' sensitivity. For example, it is a common practice in American English to avoid words that have a negative connotation by using more positive or neutral terms. For instance, the word "special" is used in "Special Olympics" and "special education" to avoid using the word "disabled." In Chinese, however, "disabled" is often the word used in both phrases. In short, the findings of this pilot study confirmed the accuracy of our intuitive understanding of most of the vocabulary items used in the study except for "ugly" and "stupid." The findings regarding the latter two words suggest that in addition to "culturally neutral" and "cultural-connotation-different" words, there is another group: "quasi cultural-connotation-similar" words. This new understanding was taken into consideration in the data analysis of the actual study.

The main study

Soon after the pilot study, the English version of the survey test was given to the 64 intermediate and the 61 advanced EFL college English students in China and to the 61 native English-speaking American college students. The two EFL groups were allowed to use dictionaries in completing the task for words they did not know. After the test, the subjects' ratings of the words were tabulated.

Statistical analysis

To answer the first research question, "Whether EFL speakers' understanding of selected culturally loaded words approximates that of native speakers of American English," called for a comparison of the Chinese subjects' ratings of the words with those of the Americans. Since the Chinese students were divided into two levels, and since the total number (=125) of the Chinese students was twice that (=61) of native speakers, it would not be statistically sound to conduct a *t*-test on the means between the Chinese students as one group and the native speakers as another. Instead, an ANOVA was chosen to be conducted, followed by, if necessary, a Tukey's test to determine if there were significant differences

between the ratings of the words by the three groups, i.e., the Intermediate EFL (I-EFL) group, the Advanced EFL (A-EFL) group, and the native-speaker (NS) group. Furthermore, because some of the words under study were appropriate in both languages, some were inappropriate in both languages, and some were appropriate in Chinese but not in English, it would not make sense to conduct Tukey's test on the overall means of the ten words together. A Tukey's test was rendered, therefore, on each of the ten vocabulary items.

The results of the Tukey's test should also, in part, help answer the second research question: "To what extent EFL proficiency level may account for the approximation of ESL students' understanding of culturally loaded words towards that of native speakers of American English." In addition to ascertaining whether there were significant differences between the intermediate students, the advanced students, and the native speakers, the Tukey's test would also pinpoint where the differences were. To further and more directly answer this second research question, the r-square generated from the ANOVA test would be checked to determine how much English proficiency might account for the variance between the three groups' ratings on the test items.

RESULTS AND DISCUSSION

An ANOVA was applied and the results showed a very significant difference among the three groups' overall ratings. The results are shown in Table 2. A Tukey's test was then conducted with regard to the three groups' ratings on the ten vocabulary items respectively. The results are reported in Table 3 and Figure 2. Because the vocabulary items under examination consisted of three different types: culturally neutral, quasi cultural-connotation-similar, and cultural-connotation-different words, discussion of the results will be organized around these three categories in sequence to help answer the research questions more orderly and clearly.

Table 2: ANOVA summary table of total scores across three groups

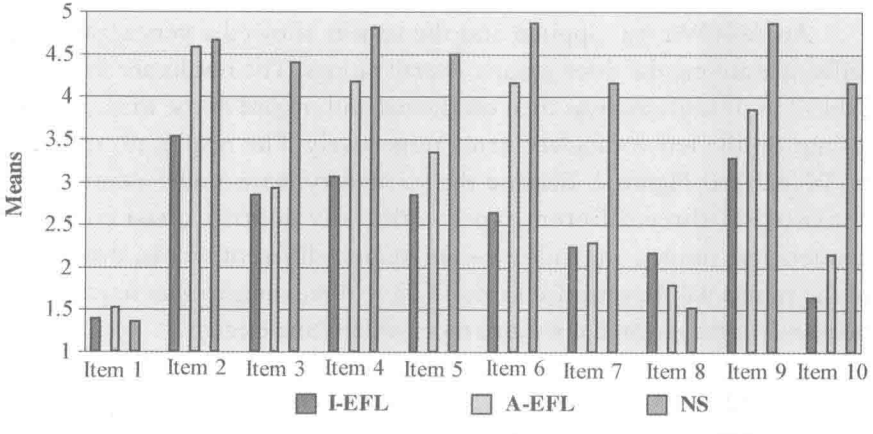
Source	*df*	*Sum of Squares*	*Mean Squares*	*F*	*Sig*
Between groups	1	72.69621	72.69621	255.975	0.0001
within groups	184	52.25540	0.28400		
Total	185	124.95161			

Table 3: Means, standard deviations, and Tukey Test results of comparison between the three groups' ratings

Item	I-EFL (N=64)		A-EFL (N=61)		NS (N=61)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Item 1	1.38_a	0.86	1.52_a	0.98	1.36_a	0.55
Item 2	3.53_b	1.66	4.57_a	1.02	4.67_a	0.70
Item 3	2.84_b	1.35	2.93_b	1.23	4.39_a	0.71
Item 4	3.06_c	1.68	4.18_b	1.18	4.82_a	0.39
Item 5	2.84_c	1.24	3.34_b	1.34	4.49_a	0.65
Item 6	2.64_c	1.66	4.15_b	1.29	4.87_a	0.50
Item 7	2.23_b	1.17	2.28_b	1.20	4.15_a	0.99
Item 8	2.16_b	1.16	1.79_{ba}	1.19	1.52_a	0.85
Item 9	3.28_c	1.66	3.85_b	1.39	4.87_a	0.43
Item 10	1.64_c	0.78	2.15_b	1.18	4.16_a	0.88

Note: Means (M) with a common subscript are not significantly different by the Tukey test where $p<0.05$.

Figure 2: Item group means



Culturally Neutral Words

The results of the Tukey's test clearly separate the two culturally neutral words ("visit" and "instruction") from the rest of the items because they are the only two words on which the average ratings by all three groups fall under 2.16 with most of them ranging between 1.36 and 1.79. More

importantly, for the word "visit," there is no significant difference between the three groups' average ratings. As for the word "instruction," although the results are not like those on the word "visit" as expected, the differences between the groups' ratings on this word are unique in the sense that there is no significant difference between the I-EFL group and the A-EFL group, nor is there significant difference between the A-EFL group and the NS group. The only significant difference is between the I-EFL group and the NS group. Such findings contrast noticeably with those of the other eight items where there is, on each item, either a significant difference between all three groups or a significant difference between the two EFL groups on the one hand and the NS group on the other.

Because the three groups' average ratings on the word "visit" all lie below 1.52, and because there is no significant difference between group ratings, we can safely say that all three groups considered the word appropriate or, at least, somewhat appropriate. The word "instruction" appears to be a more complex case. As already stated, on the one hand, there is a significant difference in the ratings between the I-EFL group and the NS group but there is no significant difference between the I-EFL group and the A-EFL group or between the A-EFL group and the NS group. More importantly, all three groups' average ratings are at 2.16 or below. Therefore, it is perhaps not incorrect to conclude, too, that all three groups considered the word appropriate or somewhat appropriate. As for why there is a significant difference between the I-EFL group and the NS group, there are two possible explanations. First, because of their lower English proficiency, some of the subjects in the I-EFL group might not have grasped the full semantic grids of the word "instruction," believing erroneously that instruction could only be used in the educational setting, not in the sports area. Second, "instruction" can be rendered or translated in the following different ways in Chinese according to contexts and usage: "*jiaoshou*" (meaning "teaching"), "*jiaoyu*" ("educating"), "*zhijiao*" ("advising/coaching"), "*zhishi*" ("*directive*"). While the former three can be used with anyone who engages in teaching, "*zhishi*" can only be used to refer to instructions or directives from high-ranking government officials or high-ranking military officers. Some of the I-EFL subjects might have interpreted "instruction" as "*zhishi*" here and, consequently, chose "unsure" or "somewhat inappropriate" for rating of the word because "*zhishi*" was reserved for use with high-ranking officials, not sports coaches.

Quasi Cultural-Connotation-Similar Words

The results of the Tukey test on the words "ugly" and "stupid" are also very illuminating. All three groups considered either word to be somewhat inappropriate or inappropriate, for the groups' average ratings range from 3.53 to 4.87. Yet, as was the case in the pilot study conducted to determine the accuracy of our assumptions of the cultural meanings of the words, the degree of the inappropriateness perceived by the I-EFL group and the NS group varies tremendously on both words as their ratings differ very significantly. The ratings by the A-EFL group are intriguing. With the word "ugly," the A-EFL group's mean rating (4.57) differs significantly from that of the I-EFL group (3.53) but not from the NS group (4.67). This may suggest that the A-EFL group's understanding of the word closely approximates that of the NS group. With the word "stupid," the picture is somewhat different: the A-EFL group's mean rating (3.83) differs significantly from the I-EFL group's on the one end and from the NS group's on the other. Such findings indicate that the A-EFL group's comprehension of the word has not approximated that of the NS group but it is moving in that direction, for its rating is significantly higher than that of the I-EFL group.

Cultural-Connotation-Different Words

Equally intriguing and revealing are the results on the six cultural-connotation-different words: "propaganda," "old," "laborer," "fat," "waste,", and "politics." First, the NS group apparently considered all the six words somewhat inappropriate or inappropriate since the means of their ratings register uniformly above 4, ranging from 4.15 on the word "waste" to 4.87 on the word "fat." The I-EFL group, in contrast, deemed the items, except for the word "old," somewhat appropriate or appropriate because their mean ratings all reside below 2.84 with a 1.64 on the word "politics" at the low end and a 2.84 on the words "propaganda" and "laborer" at the high end. The group's mean rating of 3.06 on the word "old" suggests that on the one hand, the students were unsure of its appropriateness and on the other hand, unlike the NS group, they did not consider the word inappropriate either. More importantly, the Tukey's test shows the I-EFL group's mean ratings on all six words to be significantly different from those of the NS group. The case with the A-EFL group is, again, more complex. The group's average ratings are consistently higher than those of the I-EFL group and uniformly lower than those of the NS group. Yet

while the group's mean ratings differ significantly from those of the NS group on all six items, they differ significantly from those of the I-EFL group only on four of them ("old," "laborer," "fat," and "politics"), not on "propaganda" and "waste."

Also worth notice is the fact that on four ("propaganda," "laborer," "waste," and "politics") of the six words, the A-EFL group's ratings stay closer to that of the I-EFL group with its mean being only 0.09 from the I-EFL group's but 1.46 from the NS group's on the word "propaganda," 0.5 versus 1.15 on "laborer," 0.05 versus 1.87 on "waste," and 0.51 versus 2.01 on "politics." Only on the remaining two words, the A-EFL group's ratings lean closer to those of the NS group with their mean being 1.12 from the I-EFL group's but only 0.64 from the NS group's on the word "old," and 1.51 versus 0.72 on "fat." The results indicate that while the A-EFL group, whose mean ratings are consistently higher than those of the I-EFL group, exhibited a tendency of approximation toward that of the NS group in understanding culturally loaded words, the approximation is inadequate because all their ratings are significantly different from those of the NS group. In addition, the extent of the inadequate approximation varies rather noticeably from word to word. For example, the A-EFL group's understanding seems to approximate much more closely to the NS group's on the words "old" and "fat" than on the other four words, for the former group's ratings are above 4.15 on these two words but mostly under 3 on the others. The rather high ratings on the two words by the A-EFL group would suggest that the students in this group, like those in the NS group, considered the words somewhat inappropriate or inappropriate. Yet the results of the Tukey's test still show a significant difference between the A-EFL group's and the NS group's ratings on the two words; therefore; the degrees of inappropriateness rated by the two groups differ significantly.

Why does the A-EFL group's understanding of "old" and "fat" approximate more closely to the NS group's than their understanding of the other four cultural-connotation-different words? An explanation is that the two are very frequently used words, so EFL students are likely to encounter them more often in their English-learning material than the other culturally loaded words in this study. By the same token, most Chinese instructors of English, according to an informal interview survey we conducted, not only understand the negative connotations of these words in English but also have plenty of opportunity to alert the students to their negative cultural meanings. The other culturally loaded words

("propaganda," "laborer," and "politics") are much less commonly used, and even most Chinese instructors of English, based on our survey, are not aware of the words' negative connotations in English. In fact, English newspapers and magazines published in China for international readers such as *China Daily* and *Beijing Review* often use such words, either unaware of or indifferent to their negative connotations. This suggests that low-frequency culturally loaded words are much more difficult to detect and therefore warrant our special attention.

English Proficiency and Acquisition of Culturally Loaded Words

The fact that the A-EFL students' average ratings are consistently higher than those of the I-EFL group and closer to those of the NS group on the culturally loaded words would suggest that English proficiency has an effect on EFL students' understanding of these words. The r-square (Table 3 on page 236) from the ANOVA test seems to suggest the same, for the r-square value 0.5795 indicates that English proficiency accounted for close to 58 percent of the variance of the subjects' ratings. Yet the influence of English proficiency does not appear sufficient because the A-EFL group's ratings are still significantly lower than those of the NS group's.

CONCLUSION AND IMPLICATIONS

The study shows some, but inadequate, L2 learners' approximation towards NSs in comprehending culturally loaded words because even most of the advanced EFL students in the study still did not seem to recognize the cultural connotations of many of the culturally loaded words. Such findings suggest that increased L2 proficiency does not automatically nor adequately improve L2 students' appreciation of culturally loaded words. More attention should thus be paid to this group of words in EFL/ESL instruction and research. To accomplish that, the following seems necessary.

1. EFL/ESL educators, native and nonnative speakers alike, should become more sensitive to culturally loaded words. Based on our observations, many nonnative-speaker EFL instructors are not aware of the cultural connotations of some of the English words. Similarly, we would not expect many native speakers to know these words' cultural connotations in the students' native language.

2. As with grammar instruction, vocabulary in general should be taught in context. Items taught in isolation must be accompanied by exercises with sufficient social and cultural contexts. Vocabulary learning must emerge from lessons that aim to help students develop communicative competence. EFL/ESL instructors should highlight all the culturally loaded words by explaining not only their different cultural connotations but also the consequences of misusing them. EFL/ESL material writers should make an effort to include in their texts culturally loaded words as points of discussion and learning.
3. More studies need to be conducted to identify culturally loaded words, especially those whose unique cultural connotations are difficult to detect by intuition and those that easily escape our attention due to their low frequency of occurrence.
4. Because of the findings concerning the words "ugly" and "stupid," it appears necessary to empirically examine those words that are intuitively considered cultural-connotation similar. Even though the connotational meanings of these words in the two languages may be similar, their difference in the degree of appropriateness or inappropriateness can still cause miscommunication because, as indicated in this study, L2 students are more likely than native speakers to use a word that is less inappropriate in their L1 than in L2. Research should thus be conducted to determine the potential difficulties of these quasi cultural-connotation-similar words to L2 students.

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APPENDIX

Instrument

Read the following sentences and indicate your opinion of the social and/or semantic appropriateness of the underlined words by circling one of the numbers (1="Appropriate and you would use the word," 2=Somewhat appropriate and you

probably would use the word," 3="Not sure," 4="Somewhat inappropriate and you probably would not use the word," 5="Inappropriate and you would not use the word."

1. We visited an auto plant yesterday.
   Appropriate 1 2 3 4 5 Inappropriate
2. A and B are classmates. After A shows B a picture of his or her sister, B says, "Oh, your sister looks ugly."
   Appropriate 1 2 3 4 5 Inappropriate
3. Many people still haven't heard of our new product. We need to engage in more propaganda about the product to let everyone know it.
   Appropriate 1 2 3 4 5 Inappropriate
4. A school invites a group of retired officials to its performance show. The principal introduces these officials to the audience by saying, "Today we are honored to have these old officials join us at our assembly."
   Appropriate 1 2 3 4 5 Inappropriate
5. Our schools' job is to produce moral, educated and disciplined laborers for the country.
   Appropriate 1 2 3 4 5 Inappropriate
6. A and B are classmates. After A mentions to B that his Aunt is not tall but weighs two hundred pounds, B responds, "It seems that your Aunt is a rather fat woman."
   Appropriate 1 2 3 4 5 Inappropriate
7. After a student finishes visiting his professor concerning a course assignment, the student says to the professor, "I'm sorry to have wasted so much of your time."
   Appropriate 1 2 3 4 5 Inappropriate
8. The coach gave his team some important instructions before the game.
   Appropriate 1 2 3 4 5 Inappropriate
9. A teacher is talking to Mr. Smith about his son's problems at school. The teacher says, "Mr. Smith, I've explained the math problems to your son many times, but he still does not understand them at all. It seems that he is a little stupid."
   Appropriate 1 2 3 4 5 Inappropriate
10. To fight against social disorder and corruption, all officials must focus on politics by putting it above everything else including economical issues.
    Appropriate 1 2 3 4 5 Inappropriate

Chapter 10

Researching and Understanding Synonymous Adjectives: A Corpus-Based Behavioral Study of *Chief*, *Major*, *Primary*, and *Main*

Originally published as: Liu, D. (2010). Is it a *chief*, *main*, *major*, *primary*, or *principal* concern? A corpus-based behavioral profile study of the near-synonyms. *International Journal of Corpus Linguistics*, 15, 56–87.

INTRODUCTION

With its ubiquity in language, synonymy or near-synonymy is a common yet complex linguistic phenomenon. While synonyms express basically the same concept, they often do so in different fashions, for different contexts, and/or from different perspectives. In other words, synonyms are often not entirely identical in meaning and hence not completely interchangeable. In linguistic terms, they "are neither in free variation, nor in complementary distribution" (Divjak, 2006, p.21). As such, synonyms are a challenging and simultaneously important lexical category because they are essential for expressing shades of meaning to help us convey our ideas and feelings precisely for effective communication (Edmonds & Hirst, 2002; Hatch & Brown, 1995). Yet the issue of synonymy has not received the attention it deserves, especially in comparison with the issue of polysemy (Edmonds & Hirst, 2002; Divjak, 2006; Divjak & Gries, 2006; Taylor, 2003). Additional systematic research is needed to shed more light on this intriguing linguistic phenomenon and, more importantly, to gain a better understanding of how various specific sets of synonyms work in terms of meaning and usage patterns. Against this backdrop, the present study examines the semantic and usage differences among five near-synonymous adjectives: *chief*, *major*, *main*, *primary*, and *principal*, using a corpus-based behavioral profile approach.[2] The rationales for examining this set of near-synonyms by using the said approach are threefold: (i) the complexity of the internal semantic

structure of this synonym set, (ii) inadequacies in the existing descriptions of the synonyms involved, and (iii) the need to test the effectiveness of corpus-based behavioral profile research on differentiating synonymous adjectives.

The Complexity of the Internal Semantic Structure of the Near-Synonym Set and the Inadequacies in the Existing Descriptions of the Synonyms

The single most important reason for examining this set of near-synonyms is its rather complex internal semantic structure and the inadequacies in the existing descriptions of the near-synonyms. On the one hand, the five adjectives share the same basic dictionary definitions: "most important" and "main" (*Longman Dictionary of American English*, 2002; *The Newbury House Dictionary of American English*, 2000; *The Oxford Dictionary of American English*, 2005) and they appear to be interchangeable in modifying certain nouns, such as *concern* and *reason*, as shown in dictionary examples and evidenced by the fact that we can indeed say a *chief*, *main*, *major*, *principal*, or *primary concern*, *reason*, etc. On the other hand, when used with some other nouns, the adjectives become completely non-interchangeable, e.g., *chief* in *chief executive* and *main* in *main dish* cannot be replaced by any of the other adjectives in the group. It is not entirely clear for which types of nouns all five adjectives may function as modifiers, to what extent they are synonymous in such a case, for which types of nouns only one or some of the adjectives can be used as modifiers, and what the motivations are for such usage differences.

Based on my scrutiny of twelve reference sources (6 dictionaries, 4 thesauri, and 2 synonym dictionaries), no clear information about these issues appears to be available in the existing reference materials. Besides the three aforementioned dictionaries, the other nine references are *The American Heritage Dictionary of the English Language* (2006), *The American Heritage College Thesaurus* (2004), *The Cambridge Thesaurus of American English* (1994), *The Concise Oxford American Thesaurus* (2006), *Longman Synonym Dictionary* (1986), *The Oxford American College Dictionary* (2002), *Oxford English Dictionary online* (henceforth *OED online*, 2008), *Webster's New Dictionary of Synonyms* (1984), and *Webster's New World Dictionary and Thesaurus* (1996). My examination showed that apart from offering the unique core meanings of the adjectives (e.g., *chief* and *principal* express the highest in rank of authority and power and *primary* indicates first in

order or origin), most of the reference materials use rather general and even circular definitions for these adjectives, which, however, is not really surprising due to the main function and limited space of dictionaries. In fact, Church, et al. (1994, pp.156–158) also found similar inadequate treatment of synonyms in their study of the synonyms *ask for*, *request*, and *demand*. Of the twelve reference materials I examined, *The American Heritage Dictionary of the English Language* (2006), *Webster's New Dictionary of Synonyms* (1984) and *the OED online* (2008) are the only three that offer any detailed information regarding the unique meanings and usage patterns of each of the adjectives in question. Yet the information is rather limited and in some cases even erroneous, as the results of the present study will show.

Testing the Effectiveness of the Corpus-Based BP Approach in Examining the Synonym Set: Theoretical Foundations and Methodological Issues

Developing a more adequate description of the five synonyms calls for a close corpus-based study of these near-synonyms because corpus-based descriptions of language have been shown to be much more accurate and informative than traditional non-corpus-based descriptions. For example corpus-based grammar books (e.g., Biber, et al., 1999; Carter & McCarthy, 2006) and corpus studies of lexical usages such as phrasal verbs, idioms, and linking adverbials (e.g., Gardner & Davies, 2007; Liu, 2003, 2008; Moon, 1998) have reported a large amount of information about lexicogrammatical usage issues that challenges traditional descriptions. A corpus-based study of these five near-synonyms will be especially meaningful because, while there have been some corpus-based studies on English lexical items, few are focused on English synonyms, especially on groups of synonyms and their internal structures. As Divjak (2006, p.33) correctly notes in her study of a group of synonymous verbs, the issue of the internal structure of a set of synonyms has "hitherto remained largely undiscussed in the literature".

The corpus-based BP approach has been shown to be especially effective in the study of near-synonyms (Divjak, 2006; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996). This approach is built largely on the theory the meaning of a lexical item correlates closely with its behavioral profile or distributional patterns. Although Hanks (1996) is believed to have coined the term "behavioral profile" for describing the distributional patterns of lexical items, the approach that advocated

focusing on distributional patterns in lexical analysis originated with the work by Firth and his followers Halliday and Sinclair, who together helped establish the study of lexis as a linguistic level and the examination of collocation as a key to lexical semantics in the 1950s and 1960s. According to Firth (1957, pp.7, 11), "the complete meaning of a word is always contextual" and we "know a word by the company it keeps." Based on this theory, "[i]n a lexical analysis," as Halliday (1966: 156) explains, "it is the lexical restriction which is under focus: the extent to which an item is specified by its collocational environment." In other words, the major task of lexical analysis is, as Sinclair (1966, p.411) puts it, to describe "the tendencies of items to collocate with each other." Sinclair (1987, 2004) distinguishes two types of tendency in lexis: "the phraseological tendency" and "the terminological tendency". To fully appreciate Firth, Halliday, and Sinclair's theory about lexical semantics and collocation, one has to gain a good understanding of the two tendencies Sinclair differentiates.

"The *terminological tendency* [...] is the tendency for a word to have a fixed meaning in reference to the world" while "the *phraseological tendency*" refers to the fact that "words tend to go together and make meanings by their combinations" (Sinclair, 2004, p.29). The former occurs in language use under the "open choice principle" condition where language users select individual words to construct phrases whose meanings are derived from the individual words (compositional meaning); the latter takes place under the "idiom principle" condition where speakers/writers make use of "prefabricated" or "semi-prefabricated phrases that constitute single choices" with meanings that are often not compositional but phraseological or unit based (Sinclair, 1987, pp.319–320). A sound, complete theory of lexical semantics requires an understanding of both types of lexical tendencies/meanings and an understanding that "[t]he preponderance of [language] usage lies between the two [types]" (Sinclair, 2004, p.29).

Firth, Halliday, and Sinclair's work has profoundly influenced contemporary research on lexical semantics, encouraging empirical studies that helped establish a close correlation between lexical items' meanings and their distributional patterns (e.g., Church, et al., 1994; Miller & Charles, 1991). In an experimental study in which college students who were native speakers of English were asked to rate the degree of similarity between words in pairs and estimate the contextual similarity of some of the words embedded in sentences (contexts) drawn from the Brown Corpus, Miller & Charles (1991, p.1) found that "the more often two

words can be substituted into the same contexts the more similar in meaning they are judged to be."[3] Using a "lexical substitutability" test in a corpus study of the near-synonyms *ask for*, *request*, and *demand*, Church, et al. (1994, p.169) attained basically the same finding: lexical items' "textual substitutability" is a good indicator of their semantic similarity, yet the researchers caution that "distributional evidence alone cannot be used conclusively" on this issue. The close correlation between lexical semantics and distribution patterns that these scholars helped establish by following Firth/Halliday/Sinclair's theoretical tradition laid the foundations for the corpus-based BP studies of lexical items that began in the late 1990s (Divjak, 2006; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996).

In what appears to be one of the first corpus-based BP studies, Hanks (1996), using the British National Corpus (BNC) data, produced the BPs of several verbs including *urge*, *incite*, *bother*, and *abandon*. The BP profiles are based on the syntactic and collocational patterns of these verbs (especially their complement structures) and the frequencies with which the various patterns are used. Such BP information helps reveal each verb's primary and secondary meanings and differentiate it from its (near) synonyms (e.g., in the case of *urge*, how its BP differentiates it from related verbs like *ask*, *request*, *order*, and *command*). Although not a detailed study focusing on one set of synonyms, Hanks' discussion demonstrates clearly the power of a corpus-based BP approach in enabling us to understand semantic nuances and usage patterns of verbs in a way that would not be possible otherwise.

Since Hanks' study, there have been a few more interesting and well-executed corpus-based BP studies of verbs (e.g., Divjak, 2006; Divjak & Gries, 2006). Divjak (2006) and Divjak & Gries (2006) each examined a set of near-synonymous Russian verbs (verbs of "intending" in the former and verbs of "trying" in the latter) via a close corpus-based analysis of the verbs' morphosyntactic, syntactic, and semantic distribution patterns (measured by many variables or ID tags with which they annotated the data). They then tabulated the findings of the analysis based on a hierarchical agglomerative cluster exploration procedure. This resulted in a lucid internal structure of the near-synonym set in question in the form of dendrograms that make it possible to objectively differentiate the fine-grained meanings of the near-synonyms. Differentiating the fine-grained meanings of synonyms in a set is important in understanding synonymy or near-synonymy because, as Edmonds & Hirst (2002) have demonstrated,

when lexical items are considered synonyms, they share the same meaning at the coarse-grained level but differ in meaning at the fine-grained level in one way or another.

While the existing corpus-based behavioral studies are mostly on verbs, there have been a few on adjectives recently (Gries, 2001; Gries & Otani, 2010). Gries (2001) presented an interesting corpus investigation of the paired English *-ic* and *-ical* adjectives (e.g., *economic/economical*). Using a two-dimensional "Estimation of Significant Collocate Overlap" (ESCO) method in examining the paired adjectives' collocation patterns (primarily their modified nouns, shared and unshared), he was able to identify the degree of semantic similarity and difference between the two adjectives in each pair in a way that had not been possible in the past. Of course, Gries (2001) was not the first one to examine the types of nouns that adjectives modify to identify the semantics of adjectives. Geeraerts (1986) already demonstrated how the meanings of polysemous adjectives can be differentiated by the nouns they modify using the example of the Dutch word *vers* ("fresh"). For example, when used to modify the word *wound*, the adjective means "fresh, recent," but when modifying the word *air*, it means "fresh, pure, untainted" or "optimal" (Geeraerts, 1986, p.283). Gries & Otani (2010) is a sophisticated corpus-based BP study of a set of three synonymous adjectives, *big*, *great*, and *large*, and their antonyms, *little*, *small*, and *tiny*. In order to gain a clear internal semantic structure of the synonym/antonym set, they first retrieved all the tokens of the lemmas of the six adjectives from the British Component of the International Corpus of English and then had the data "imported into a spreadsheet software and then annotated for a variety of features" such as syntax (e.g., whether a token adjective is an attributive or predicative use) and semantics (whether the noun modified by a token adjective is abstract or concrete). Then they used a statistical program called "R script BP 1.0" to analyze the data, resulting in a BP for each of the adjectives. Finally, they compared the adjectives' BPs using a hierarchical agglomerative cluster analysis (the same analysis used in Divjak, 2006 and Divjak & Gries, 2006), yielding dendrograms that clearly exhibit the semantic and usage patterns of the synonym/antonym set.

It is important to note that, despite the similarity in their goal of identifying the distribution patterns of lexical items, the specific — or what I would like to call "micro" — procedures used by the scholars in the aforementioned corpus-based BP studies (which do not include Geeraerts,

1986, as it is not a corpus-based study) are not identical. This fact appears to suggest that there are no established micro-procedures for corpus-based BP studies. In fact, the use of diverse procedures makes perfect sense in the study of internal structures of near-synonym sets because the way near synonyms differ often varies from synonym to synonym and from set to set. According to Cruse (1986, 2000) and Edmonds & Hirst (2002), near-synonyms may differ in any aspect of their meaning and their differences fall into four broad dimensions: "denotational," "stylistic," "expressive," and "structural" (Edmonds & Hirst, 2002, p.109). Thus a researcher has to decide, based on a close scrutiny of the features of the synonyms being examined, what micro-procedures to employ. Hanks (1996, p.96) makes this point indirectly when he argues for the necessity of human judgment in corpus-based behavioral profile research:

> But the [usage/distribution] patterns do not spring, untouched by human hand, fully fledged from the corpus. They have to be teased out, often painstakingly and slowly. Procedures have to be developed for distinguishing relevant features from noise. Appropriate levels of generalization have to be chosen at every step. (Underscoring added.)

The above review has shown that corpus-based behavioral profile studies are an effective approach to understanding synonyms, one that suits the purpose of the present study. Another motivation for using the approach in the present study is that, as shown in the above discussion, the approach has thus far been used mostly in examining sets of synonymous verbs with only one study on a set of synonymous adjectives (Gries & Otani, 2010). It will be interesting and useful to further test the effectiveness and viability of the approach in examining a large set of synonymous adjectives. As Hanks (1996, p.92) notes, "there is no reason to believe that the procedures that help us to use and understand verbs are relevant to, say, nouns or adverbs."

In short, using a corpus-based BP approach, this study aims to uncover the semantic and usage differences among the five adjectives in question by examining primarily their various distributional patterns, including their collocational, colligational, and stylistic variation patterns. In the process, the study will also try to determine which co-occurrent(s) best help identify the adjectives' semantic and usage patterns. The corpus-based distribution pattern analysis will be complemented by a scrutiny of some specific concordance examples to help better uncover the differences

among the near-synonyms and to arrive at a sound depiction of the internal semantic and usage structure of the near-synonym set. The corpus used for this study was the 360 million-word online Corpus of Contemporary American English (COCA; Davies, 2008–).[4] The corpus was chosen for its comprehensiveness, contemporariness, variety of useful user-friendly search functions, and easy access.

Data Retrieval, Analysis, and Discussion

Overall usage patterns

To understand the usage patterns of the five adjectives, the first and most basic information we need to obtain is probably their overall frequency patterns. Because all five adjectives may also function as nouns, to identify each item's adjective use, I used the "show pos [parts of speech]" function available in the COCA search engine. The results (reported in Table 1) indicated the following frequency order (from lowest to highest): *principal*, *primary*, *chief*, *main*, and *major*, and a very large variation in frequency among the adjectives (with the exception of *primary* and *chief* which only had a minuscule difference in frequency). For example, the frequency of *principal* is only 10% that of *major*, 20% that of *main*, and 37% that of *primary* and *chief*.

Table 1: Frequency of the five adjectives

principal	*primary*	*chief*	*main*	*major*
7,837	21,054	21,071	39,076	76,586

The total frequency information, though important, does not tell us anything about the meaning and specific usage patterns of each adjective. Based on a scrutiny of the twelve dictionaries and thesauri I consulted, it appears that a central meaning that the five adjectives share is an indication of a maximum in importance, value, etc., although the source or the core meaning from which this meaning is derived for each of the words differs. For example, in the case of *chief* and, to some extent, *principal* as well, it comes from being the highest in rank of authority and power; for *primary*, it is derived from being first in sequence or origin; for *main* and also *major* to a certain degree, it stems from being greatest or greater in extent and size. These differences in the core meanings can be expected to cause semantic and usage variations among

the adjectives, particularly in the types of nouns they each typically modify. This focus on the nouns the adjectives modify is motivated by the primary function adjectives perform — modifying nouns. Also the five synonyms are all supposedly attributive adjectives, a point made clear in some dictionaries (e.g., *The Oxford Dictionary of American English*, 2005). Examining the types of nouns attributive adjectives modify is a logically sound and productive procedure for understanding the semantic and usage patterns of these adjectives as previous research has shown (Geeraerts, 1986; Gries, 2001; Justeson & Katz, 1995).[5] A few other co-occurrents or properties related to the adjectives will also be examined later in this paper.

To identify the typical types of nouns the adjectives modify, I first searched the COCA for the adjectives' modified nouns via two types of queries: (i) frequency (i.e., the nouns that the adjectives modify most frequently) and (ii) Mutual Information (MI) score. MI, first introduced to corpus analysis of lexis by Church & Hanks (1990, p.23), "compares the probability of observing *x* [word] and *y* [word] *together* (the joint probability) with the probabilities of observing *x* and *y independently* (chance)." An MI score around 0 suggests that the two words do not collocate while a score of 3 or higher can be considered evidence that the two items often co-occur. MI is not the only statistical procedure used for measuring collocations. T-score is also widely used but MI is adopted here because it favors collocating content words, which is the focus of the present study, whereas t-score favors function words (for more information about the two measures, see Church, et al., 1991; Church, et al., 1994).[6] The frequency measure and the MI score can complement each other in better identifying the nouns that are typically modified by the adjectives. The frequency measure privileges words that have an overall high frequency in the corpus, yet it undervalues those that have a low general frequency but occur habitually with one of the adjectives. As a result, the frequency measure may end up including in its list of the nouns most typically modified by the adjectives those that do not actually collocate strongly with the adjectives but whose sheer high general frequency causes them to have a fairly high raw frequency number in co-occurring with the adjectives. The MI score can help overcome this disadvantage of the frequency measure but it has its own shortcoming in privileging words that have a low overall frequency but a very high tendency to collocate with the lexical item in

question (Church, 1994, p.168). For example, of all the nouns modified by *primary*, *hyperparathyroidism* has the highest MI score (12.67) simply because there are only 52 tokens of the word in total and 20 of them collocate with *primary*. Therefore, despite its very high MI score with *primary*, *hyperparathyroidism* is of little importance for the purpose of this study due to its extremely low overall frequency. Thus, to ensure the representativeness of the most frequent nouns measured by the MI score, I excluded those nouns that have fewer than 200 tokens of co-occurrence with the adjective in question. Yet in the case of nouns modified by *principal*, I lowered the selection threshold to 50 because, due to the very low overall general frequency of *principal*, only one noun has more than 200 tokens as a collocate of *principal*, five have between 100 and 199 tokens, and seven between 50 and 99 tokens. In other words, if the threshold of 200 tokens were also applied to the nouns modified by *principal*, the typical noun list for this adjective would contain only one word.

Based on the results of the frequency and the MI queries, a list of the top ten nouns modified by each adjective in each measure was compiled (see Table 2). Despite the different foci of the frequency measure and the MI score, there is substantial overlap between the results of the two measures: 80% overlap for *principal*, 70% for *chief* and *primary*, 60% for *main*, and 40% for *major*. There is also overlap among the nouns modified by the five adjectives. Because of this substantial overlap, there are only 50 different words in total in the entire list. The list includes only the top ten nouns in each measure for each adjective for two related reasons: First and foremost, if the inclusion expands to fifteen or twenty in each measure, the list would contain some very low-frequency items, especially in the case of the items modified by *principal* due to the latter's overall low frequency. Second, expanding the selection to fifteen or twenty does not significantly increase the overall number of words in the entire list due to the aforementioned overlap between the nouns in the two measures and among the items modified by the five different adjectives.[7]

Another issue worth discussing here is that quite a few of the nouns (e.g., *executive* in *chief executive*, *care* in *primary care*, and *street* in *main street*) can be considered compounds or multi-word units (MWUs), thus raising the question of whether they should be included. The reasons for including them are three-fold: First, despite the fact that they may be considered compounds, the adjectives involved in them are each

Table 2: Nouns modified most frequently by each of the five adjectives measured by frequency and MI score

principal		*primary*		*chief*		*main*		*major*	
by frequency	**by MI score**	**by frequency**	**by MI score**	**by frequency**	**by MI score**	**by frequency**	**by MI score**	**by frequency**	**by MI score**
investigator 266*	investigator 11.73**	care 1,081	objective 8.35	executive 5,870	executive 11.31	street 2,918	street 8.40	league 3,151	league 9.98
components 190	sponsor 10.75	goal 556	color 8.26	justice 1,803	economist 11.07	reason 1,075	entrance 8.37	role 1,088	obstacle 8.47
owner 160	components 9.58	source 512	goal 8.25	opera-officer 940	negotiator 10.70	effect 955	dish 8.18	problem 958	corporations 7.54
sponsor 134	residence 8.82	school 457	purpose 8.14	economist 710	opera-officer 9.70	thing 885	objective 7.48	cities 885	cities 7.49
reason 96	owner 8.56	focus 451	source 7.98	engineer 336	justice 9.40	road 615	effect 7.35	changes 794	airlines 7.28
source 88	source 6.89	concern 431	concern 7.83	counsel 265	curator 9.45	concern 448	characters 7.33	factor 640	factor 7.13
author 64	goal 6.41	purpose 430	responsibility 7.62	correspondent 241	engineer 9.30	character 438	courses 7.28	source 627	component 6.82
cause 61	reasons 6.38	reason 415	focus 7.44	scientist 184	investigator 8.75	course 434	reason 7.20	concern 557	source 6.57
goal 57	author 6.17	responsibility 317	care 7.41	prosecutor 153	counsel 8.52	problem 417	concern 7.04	issue 538	concern 6.50
residence 55	cause 5.89	colors 302	reason 6.68	deputy 149	correspondent 8.51	source 387	purpose 6.88	part 528	powers 6.42

Note: *Number of total tokens, i.e., total frequency as noun modified by *principal*.
**MI score.

used as adjectives and they are indeed so tagged in the COCA. Second and more importantly, as nouns in "compound"-like units, often they each may take only one of the five adjectives as its collocate (e.g., only *primary* may collocate with *care* in *primary care*). This fact indicates a clear special semantic and usage connection between the adjective and the noun in question, an issue that is of central interest in this study. Third, determining the adjectives' typical noun collocates is the key procedure used in this study to uncover the distributional patterns of the adjectives. As these nouns are strong collocates with their respective adjectives, it is necessary to include them in this study whether they are truly compounds/MWUs or not.

To determine the differences among the near-synonym adjectives with regard to the types of nouns they modify, I classified the nouns into six major semantic categories: (a) abstract (e.g. *concern* and *reason*), (b) concrete (e.g., *road* and *dish*), (c) dual (e.g., *source* and *component*), (d) institution (e.g., *school* and *corporation*), (e) position-title (e.g., *executive* and *counsel*), and (f) non-position-title (e.g., *sponsor* and *author*).[8] The classification results are included in Table 7 in the Appendix with explanations about why some of the items were classified the way they were at the end of the Table. Then I identified the types of noun collocates of each adjective, and the results (reported in Table 3) show clearly that they vary substantially from adjective to adjective.

Table 3: Types of nouns modified by each adjective

Principal **(10 different nouns)**	***Primary*** **(11 different nouns)**	***Chief*** **(13 different nouns)**	***Main*** **(14 different nouns)**	***Major*** **(15 different nouns)**
3 abstract	7 abstract	13 position-title	7 abstract	6 abstract
3 non-position-title	2 institution		5 concrete	5 institution
2 dual	1 dual		2 dual	4 dual
1 concrete	1 concrete			
1 position-title				

The types of nouns that boast the widest distribution range are abstract and dual nouns. They each appeared with four of the five adjectives, except for *chief*. These results provide us with some important information about the

usage patterns of the adjectives but they do not offer a complete picture. For example, even though all the most frequent nouns under *chief* are position titles, it does not mean the adjective is not used to modify any of the other nouns on the list. We just do not know for certain whether and how often the adjective is used to modify the other types of nouns in the list. We need such information to gain a better and more complete understanding of the adjectives' usage distributions and meanings. Thus, I queried COCA regarding the five adjectives' frequencies with each of the 50 nouns and then tabulated the adjectives' total frequencies with the 50 nouns and their frequencies with each of the six types of nouns. The results are reported in Table 4. Before I discuss the statistical analysis of the frequency distributions, it is important to note that the order of the total frequencies of the adjectives' uses with the 50 nouns mirrors that of the overall total frequencies of the adjectives reported in Table 1: *principal*<*primary*<*chief*<*main*<*major*. This order correlation offers indirect evidence that the 50 most-frequent nouns are representative of the overall nouns modified by the adjectives. If the order were different here, that would raise questions about the representativeness of the fifty nouns. For example, if *principal* were ranked higher than *primary* here, it would mean the adjective had more tokens than *primary* in the fifty nouns, but in the overall data *primary* actually has far more tokens than *principal*. This in turn would indicate an over-representation of *principal* and an under-representation of *primary* in the fifty nouns in relation to their overall distributions in the corpus.

Semantic and usage patterns across different types of nouns: Noticeable variations and similarities

To determine whether and in what way the five adjectives' distributions among the six types of nouns differ significantly, I conducted a multifactorial test called hierarchical configural frequency analysis (HCFA) with the adjectives' frequency numbers in Table 4, using Gries' (2004) HCFA 3.2 for R program.[9] The results are reported in Table 8 in the Appendix. An HCFA is a much more informative test than the Chi-square test because, in addition to yielding the results that a Chi-square produces, it also shows which cell frequencies in the contingency table are significantly higher or significantly lower than their expected ones. A cell frequency significantly higher than expected is considered a "type" whereas a cell frequency significantly lower than expected is an "antitype". A cell frequency that is higher or lower than expected but its difference is what chance would predict is considered neither a type nor an antitype, marked as "ns" (not significant) in the "Dec"

Table 4: Distributions of the types of nouns modified by the five adjectives*

	Abstract	Concrete	Dual	Institution	Position-Title	Non-position-Title	Total
Principal	740 A	70 A	557 T	38 A	421 A	395 T	2,221
Primary	4,001 T	440 A	1,124 T	1,705 T	55 A	84	7,409
Chief	420 A	1 A	116 A	16 A	11,465 T	75 A	12,093
Main	7,422 T	5,157 T	1,639 A	161 A	4 A	44 A	14,427
Major	7,746 T	199 A	3,150 T	6,127 T	12 A	67 A	17,301

Note:* A cell frequency followed by the letter T means it is a "type" based on an HCFA test (discussed below) while a cell frequency followed by an A means it is an "antitype." A cell frequency followed by no letter is neither.

(decision) column of the results printout.

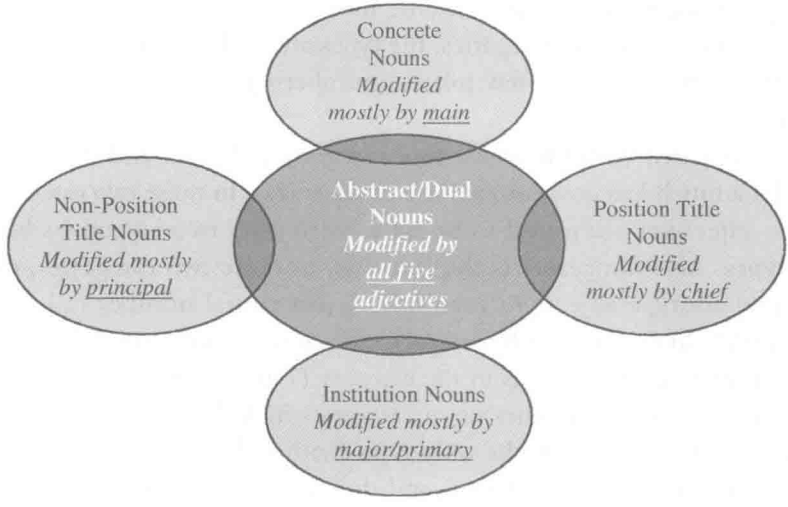
The Chi-square part of the HCFA test showed a significant difference among the five adjectives' distributions across the six types of nouns: χ^2 (df=20)=69,616.09, p<0.001, with an effect size of Cramer's V=0.57. The detailed results of the HCFA test reveal that in three of the six noun categories (i.e., in concrete, position-title, and non-position-title nouns) one adjective dominates the category with a frequency so significantly higher than expected that it constitutes the only type in the category. In the concrete category, *main* is the sole type with the other adjectives all being antitypes; in the position-title category, *chief* is the only type with the other adjectives all being antitypes; in the non-position-title category, the situation is slightly different: *principal* is the sole type, *chief*, *main*, and *major* are antitypes, and *primary* is neither a type nor an antitype because, although its frequency is lower than expected — as are those of *chief*, *main*, and *major* — it is not significantly lower. These results suggest that concrete nouns are modified primarily by *main*, position-title nouns almost exclusively by *chief*, and non-position-title nouns mostly by *principal*. Besides the aforementioned three types of nouns, the institutional noun category also shows a rather concentrated use of adjectives. The only difference is that in this category two adjectives (*major* and *primary*) are types with the remaining three being antitypes. In other words, institution nouns are modified mainly by *major* and *primary*. In fact, the two adjectives in combination modify 97% of nouns in the category, leaving *chief*, *main*, and *principal* to share the remaining infinitesimal 3%. One more point worth noticing is that, in all of the four noun categories, the types are so dominant that some of the antitypes have only a few tokens (numbering in the single or double digits).

Compared with the above four categories, abstract and dual nouns exhibit a much less concentrated use of adjectives. In these two categories, three adjectives are found to be types with only two adjectives being antitypes. Also noticeable is the fact that, in these two categories, even the two antitype adjectives each have a substantial number (all in the hundreds). In fact, although *principal* in the abstract category is an antitype, the number of tokens it has in the category (740) is much higher than its numbers in any of the other noun categories including the non-position-title category where it is the only type (with only 395 tokens). *Chief* is an antitype in both the abstract and dual noun categories, and yet the

numbers of tokens it has in the two categories are much higher than its numbers in the other categories except for the position-title one where it is the only type. In the case of *main*, though it is an antitype in the dual category, it has in fact a very large number of tokens (1,639) in it, second only to *major*. Thus, in terms of raw frequency counts, abstract and dual nouns are the only two categories in which each adjective has a substantial number of tokens. Furthermore, as mentioned earlier, abstract/dual nouns are the only two categories that appeared in the list of the most frequently modified nouns under four of the five adjectives (except *chief*; cf. Table 3).

That all of the five adjectives are used fairly commonly to modify abstract/dual nouns also seems to be a fact accepted by dictionaries, for when defining the five adjectives most of the dictionaries I examined used examples showing the adjectives modifying abstract/dual nouns, e.g., *chief*, *main*, *major*, *primary* and *principal concern/reason/problem*. Hence, based on the data analysis so far, the five adjectives' main usage patterns across the six types of noun may be summarized and illustrated in the diagram in Figure 1. When modifying abstract/dual nouns, all five adjectives appear to mean "most important," "serious," etc. Still, there may be fine-grained meaning and functional differences among the adjectives' use with these two types of nouns, an important issue that will be examined in the sections below.

Figure 1: The adjectives' main usage patterns: Variations and similarities



But the analysis of the adjectives' general usage patterns has also yielded a few findings that challenge established dictionary definitions. The first one concerns *principal*. All the dictionaries that I consulted and that give an explanation of the word's core meaning define it as "first in order of power and importance" when referring to a person and "first, chief, most important" when modifying a thing. In other words, its core meaning appears to be almost the same as that of *chief*.

Given this core meaning, *principal* should have a usage pattern basically identical to that of *chief*, yet, as discussed earlier, *principal* is almost never used with position titles. The only noun denoting a position title that *principal* modifies substantially is *investigator*, but *investigator* is not a position of power and even its status as a position title is questionable because *investigator* is often a temporary function a person performs in a research or other project. More importantly, unlike *chief*, *principal* is used primarily with non-position titles like *author* and *sponsor*. These nouns are not known for power although as a *principal owner* or *sponsor*, one does have certain power. The semantic focus of these nouns when modified by *principal* (i.e., *principal authors*, *sponsors* or *owners*) is the extent of share in the work or contribution involved. In this sense, the meaning of *principal* so used is not "first in order of power" but "first in order of share in contribution". However, this contemporary meaning and use of *principal* is not found in any of the dictionaries I consulted, not even in the *OED*.

The second usage pattern that challenges dictionaries' definitions relates to the fact that while this study has found *main* to be basically the only adjective used to modify concrete nouns, some dictionaries present the other four as adjectives often used with concrete nouns. For example, in its coverage of the core meaning and use of *principal*, *Webster's New Dictionary of Synonyms* (1984, p.144) lists the following examples: "<the *principal* gate to the grounds of an institution><the *principal* street of a city>." Yet as the corpus data here show, *principal* rarely modifies concrete nouns. There is not a single token of *principal gate* and only 8 tokens of *principal street(s)*.

The third usage pattern that raises questions about dictionary definitions is the use of *main* with concrete nouns. According to most dictionaries, "greatest in size" is a core meaning of *main*. Yet size does not appear to be the essential quality in the nouns typically modified by *main*, such as *dish*, *entrance*, *road*, *streets*, and *lobby*. When any of these words is modified by *main*, the

semantic focus is the important or extensive role the said noun plays in the function it serves, not its size. A *main* entrance or street is not necessarily the largest in size but certainly the most heavily used one. Similarly, the *main* meeting room in a place is not necessarily the largest meeting room but the one used most often.

Usage patterns with abstract/dual nouns: Fine-grained semantic variations

As stated above, all five adjectives seem to converge in meaning and function in their use with the abstract/dual nouns. It would be difficult to determine whether there are fine-grained meaning and usage differences among the five adjectives by comparing the meanings of the tokens of the five adjectives used with abstract nouns because the contexts of the tokens all vary (i.e., different topics, different situations, etc.). Traditionally, to find answers to such questions, researchers have relied on questionnaire-type research where subjects are asked to judge the difference in degree expressed by the synonyms in question. Yet such a research method has its own weaknesses, e.g., the use of non-natural data, subjective judgment, and the difficulty involved in designing and implementing such a study.

Given the distributional and semantic similarity of synonyms, an examination of some of the structural pattern differences in the use of the adjectives in the set should shed light on their semantic differences. It would also help with constructing a more complete behavioral profile of the adjectives. Thus, I queried the COCA regarding two structural patterns of the five adjectives' tokens. The first was the frequency of the singular tokens of the abstract/dual nouns versus the frequency of the plural tokens of these nouns with each adjective. Gries & Otani (2010) in their analysis of synonyms/antonyms also examined the count/non-count feature of the modified nouns, but they did not appear to have looked at it in combination with the definite/indefinite feature. I opted for the number and definite/indefinite features because of their relevance to the question being examined regarding the adjectives. It was my hypothesis that the higher the percentage of abstract/dual nouns in the singular form that an adjective modifies, the higher the degree of importance the adjective conveys, because if there is only one *main issue*, *goal*, etc., it is certainly of more importance or value than if there are more than one. In this sense, an adjective that typically takes singular abstract/dual nouns as its collocates conveys a meaning of more importance than an adjective that typically takes

plural nouns as its collocates. The second structural pattern I queried was how often each adjective's uses with the abstract/dual nouns were preceded by a definite determiner (e.g., the article *the*, possessive pronouns, and the possessive *-s*) and how often they were preceded by an indefinite determiner (e.g., *a/an*, *some*, and no determiner). This information, though related to the singular vs. plural question, offers additional information. The importance of a singular noun may vary depending on whether it is preceded by a definite or indefinite article. A definite singular issue unequivocally indicates a higher degree of importance than an indefinite singular issue, as can be seen in the following two COCA examples:

(1) *A major reason* for the Chargers' turnaround is QB Drew Brees ...
(2) *The major reason* for case managers to appear in court was to seek stipulations.

While in Example (1) the quarterback was only one of the major reasons for the Chargers' turnaround, in Example (2), to seek stipulations was the only major reason.

Testing whether and in what way the syntactic features (number and definiteness) of the abstract/dual nouns the adjectives modify differ significantly calls for an HCFA test of the frequency data of each adjective's noun tokens organized in the following fashion: (i) singular/definite, (ii) singular/indefinite, (iii) plural/definite, and (iv) plural/indefinite (see Table 5).

Table 5: A comparison of the number/definiteness of the abstract/dual noun tokens modified by the five adjectives

	Singular/ Definite	Singular/ Indefinite	Plural/ Definite	Plural/ Indefinite
Principal	665	167 A	343 T	122
Primary	3,442 T	642 A	880	161 A
Chief	362 T	62 A	92	20 A
Main	6,263 T	439 A	1,688	671 A
Major	1,893 A	5,554 T	1,898	1,551 T

Of the four categories of use, the singular/definite use conveys the highest level of importance and the plural/indefinite use expresses the lowest with the other two in the middle. The Chi-square part of the HCFA test indicates

a significant relation among the variables: χ^2 (df=12)=8,828.09, p<.0001, with an effect size of Cramer's V=0.33. The detailed results of the HCFA test, reported in Table 9 in the Appendix, suggest that *major*, being the only antitype in the singular/definite use and the only type in the plural/indefinite use, expresses the lowest level of importance in the set. *Principal* conveys the next lowest level of importance because it is neither a type nor an antitype in either use category while *main*, *primary*, and *chief* are all types in the singular/definite use and antitypes in the plural/indefinite use. As such, the latter three clearly express a higher level of importance than the other two adjectives. Is there a difference then among these three adjectives in the degree of importance they convey? There certainly is, although not statistically significant. The difference can perhaps be best seen in the three adjectives' q values in the singular/definite use, the category of use that expresses the highest level of importance (cf. Table 9). Since q is an effect size measure, the higher the q, the more significantly higher an adjective's cell frequency is than expected (Gries, 2010) and hence the higher the degree of importance the adjective conveys in our present case. *Main* has the highest q (0.089) in this use category, followed by *primary* with a q of 0.042, and *chief* with a q of 0.020. With all the above findings considered, the order of importance the five adjectives convey may be represented in a diagram as shown in Figure 2 with *major* being the least important and *main* the most important. This diagram, together with Figure 1, helps delineate the internal semantic structure of the set of five near-synonyms.

Figure 2: Difference in the degree of importance the adjectives convey when modifying abstract/dual nouns

less important ← ***major*<*principal*<*chief*<*primary*<*main*** → more important

The finding about *major* expressing the least degree of importance in the group is not really surprising because the adjective's core meaning is "greater or greatest in order of importance, seriousness, size," etc. as defined by dictionary definitions. However, the finding that *principal* is ranked the second lowest in importance in the set is surely puzzling, given its known core meaning found in most dictionaries, namely "first in order of power or importance" or "first, chief, most important," a core meaning that is similar to that of *chief*. If this core meaning of *principal* were to hold up in actual language use, the number of its nouns' definite and singular uses should

be similar to that of the word *chief* but in reality it is much lower. Another somewhat surprising finding is the fact that *primary* and *chief* rank almost the same in the degree of importance they convey with *primary* ranking slightly higher. This is surprising because the core meaning of *chief*, i.e., "being the highest in rank of authority and power," should arguably imply more importance than the core meaning of *primary*, i.e., "being first in order of sequence or origin." Yet the corpus findings indicate otherwise. In fact, the following specific example from COCA seems to suggest that, to some people, *primary* indeed expresses more importance than *chief*:

(3) They knew that their history would be *the chief, almost primary* source for other Lincoln scholars for a very long time.

In this example (an excerpt from a *Chicago Sun Times*' article), the writer appears to believe *chief* is not quite as important as *primary* because he/she considers the history in question to be a *chief* but not yet *primary* source.

Additional new findings based on other syntactic properties and qualitative analysis

In order to determine whether there are additional semantic and usage differences among the adjectives, I queried the COCA concerning the following syntactic and co-occurrence information related to the adjectives: (i) predicative use of the adjectives and (ii) adverbs that modify these adjectives. As stated earlier (cf. Section 4.1), the five near-synonyms have been classified as attributive adjectives only. As such, they are not supposed to be used as predicative adjectives (i.e., we cannot say *"The issue is *chief*"), nor are they usually modified by adverbs, especially degree adverbs (i.e., we cannot say *"fairly/very/extremely *chief*, *main*, etc."). My query therefore was meant to test the established assumptions and to make sure there are no exceptions. The query results show that, except for *major* and *primary*, the near-synonyms are indeed never used as predicative adjectives and they are not modified by degree adverbs. The use of *major* and *primary* as predicative adjectives contradicts the established notion about them being attributive adjectives only, although, of course, the numbers of the two adjectives' tokens in predicative use and in being modified by degree adverbs are fairly low. In terms of predicative use, *major* has 95 tokens and *primary* 66. Regarding co-occurrence with degree adverbs, although *major* boasts 282 tokens, *primary* claims only 18. The typical degree adverbs modifying the two adjectives are *very* and *really*, although *pretty* and *fairly* are also often used to modify *major*, as can be seen in the following COCA examples — where (4) and (5) illustrate the modification of the two adjectives by degree adverbs

while (6) and (7) exhibit their predicative uses:

(4) I think that's a *very major* step forward.
(5) When our water level hits 22 feet, that becomes a *very primary* concern.
(6) You know, marriage and motherhood *are pretty major.*
(7) Positions involving oversight of EE [environmental education] have been eliminated or the coordinator's responsibilities changed so that EE is no longer *primary*.

The unique syntactic co-occurrence patterns of the two adjectives raise the question of whether the two adjectives may sometimes have distinctive meanings. To that end, I perused over 600 tokens of the two adjectives (a little over 300 for each) in the "expanded context" (typically around 170 words for each token) available on the COCA's web interface. This examination led to two important findings: First, the two adjectives, especially *major*, are sometimes used without implying any comparison, a use not really possible with the other three adjectives. Whenever one of the other three adjectives is used, it implies a comparison. For example, when we say "a/the *chief* engineer," "a/the *principal* investigator," or "a/the *main* lobby," it presupposes that there are other engineers, investigators, or lobbies that are not as important or useful as the *chief*, *principal*, or *main* one. Unlike these adjectives, *major* and *primary* may not always have this implication. Let us first look at some examples of *major* in comparison with *main* (all from the COCA):

(8) A *major earthquake* of 6.2 on the Richter scale was recorded last summer, leaving a 50-foot hole near the proposed site for the plant.
(9) Disease, attacks from hostile Iroquois, and a *major earthquake* in Quebec in 1663 had brought its fur-trading company to the brink of ruin ...
(10) There are — are small aftershocks almost all the time, it seems. This was one of the biggest ones of the day, since the *main earthquake* early this morning.
(11) Like Fusetti, they were inspecting the damage from an earlier tremor when the *main earthquake*, measuring nearly 6.0 on the Richter scale, slammed into the 750-year-old basilica.

It is clear that in examples (8) and (9), there is no implication of any other earthquakes besides the *major* earthquake mentioned and thus no comparison with other quakes, whereas in examples (10) and (11), the *main earthquake* was in reference to other quakes that occurred either earlier or afterwards. When used without implying comparison, *major* simply means "large," "important," etc., depending on the noun it modifies.

There are many such uses of *major* involving no comparison and they often begin a topic as the theme, not the rheme in a sentence, as illustrated by the following COCA example:

(12) *A major storm* delayed the flight and destroyed the tents the group had planned to stay in.

The following are two COCA examples of *primary* used without implying comparison:

(13) The gender thing isn't *really primary* for me.
(14) At the time of Adam Smith, a concern with economic issues was *understandably primary.*

Like *major*, *primary* in these examples simply means important, serious, etc. It is paramount to note, however, that this no-comparison use only accounts for part of the two adjectives' overall use. In many instances, the two adjectives do imply a comparison. An excellent example can be found in the frequent use of "*major* story/stories" in the news. The COCA data show that *major*, along with *main*, is often used at the end of TV news programs to summarize and highlight the most important news stories of the day in statements like "Again, the *major/main* stories of this Friday ...." *Major* stories in this sense certainly do not include those minor stories reported earlier. In the corpus, there are a total 474 tokens of *major* story(ies) and 234 tokens of *main* story(ies) with no tokens of *chief*, *primary*, and *principal* in such use. The second finding is related to the first one. As has been pointed out above, the meanings of *major* and *primary* often vary noticeably based on the nouns they modify. For example, in the phrase "a *major* decision," *major* simply means a decision of great importance or consequence in its own nature, but in "a *major* disaster" it suggests a disaster of a large scale, not of importance, and in "a *major* illness" it indicates a serious illness. In the case of *primary*, the variation of meaning not only depends on the nouns it modifies as shown in "*primary* concern/objective" (meaning important/main concern/objective) vs. "*primary* school/care" (meaning the first level of education/medical are), but it may also differ even when modifying the same noun depending on whether it is the core meaning ("first in order of sequence or origin") or its extended or derived meaning ("greatest in order of importance") that is tapped in a specific context as can be seen in the following COCA examples:

(15) Professional historians know this very well, but our students frequently are not accustomed to dealing with *primary source* material. Precisely the same issues that we have discussed about reading secondary sources pertain to students' reading of *primary source* material.

(16) Illegal border crossings from Mexico are the *primary source* of the five to six million illegal immigrants [that] the INS says live in the United States today.

(17) And Nicholas was named the *primary beneficiary* ... She's secondary beneficiary, but in all reality, as her son is the *primary beneficiary*, she got the money.

(18) The bourgeoisie, the *primary beneficiary* of the expropriations, assumed a position of economic, legal, and cultural dominance.

The meaning of "*primary* source" in Example (15) differs from that in Example (16). In (15), it refers to original records of what happened in history as opposed to writings about history (secondary source). In this use of *primary*, it is the core meaning that is at work and *primary* cannot be replaced by any of the other four adjectives. In (16), however, it is the extended meaning that is tapped, for this *primary* can be replaced by any of the other four adjectives without really causing a change of meaning. Similarly, the meaning of "*primary* beneficiary" in Example (17) differs from that in (18). In (17), "*primary* beneficiary" is used in the legal sense and a beneficiary in such a sense receives all the benefits and the secondary beneficiary does not get any unless the *primary* beneficiary is deceased or ruled ineligible by law for whatever reason. Thus it is the core meaning that is being used and *primary* here cannot be substituted by any of the other four adjectives. In contrast, *primary* in Example (18) conveys the extended meaning and it can be substituted by any of the other four adjectives without any change in meaning.

These examples reveal that when *primary* is used in its core meaning, it differs significantly from the other four adjectives. A few more examples, similar to the above, are "*primary* school," "*primary* election/campaign," and "*primary* care/insurance". The meaning of a *primary* school differs qualitatively from that of a *major/main/principal/chief* school (there are tokens of each of the latter usages in the COCA). Similarly, a *primary* election also differs qualitatively from a *major/main* election, although a *primary* election sometimes can be simultaneously a *major* or *main* election.

Register distribution patterns: Stylistic variations

Information about the register distribution patterns of the lexical

items is very important for language learners. It is well known that second language learners experience great difficulty in using lexical items register-appropriately. They often use formal words in informal contexts or vice versa. Identifying the register distribution patterns of the five near-synonyms should therefore be of great value to ESL learners. Furthermore, as mentioned earlier, "stylistic" (i.e., register) variation is one of the important semantic dimensions in which near-synonyms may differ (Edmonds & Hirst, 2002, p.109). Obtaining register distribution information is subsequently also important for the development of a complete picture of the internal structure of the near-synonym set. Thus I queried the COCA about the distribution of each adjective's abstract/dual noun tokens across the five registers (fiction, newspaper, magazine, academic writing, and spoken) because, as showed earlier, these two types of nouns enjoy the widest distribution across the five adjectives. The results are reported in Table 6. The Chi-square part of an HCFA test of the adjectives' distributions across the registers is significant, χ^2 (df=16)=1,201.76, p<.0001, with an effect size of Cramer's V=0.11.

Table 6: A cross-register comparison of the adjectives' abstract/dual noun tokens

	Spoken	Fiction	Newspaper	Magazine	Academic Writing
Principal	160 A	26 A	131 A	178 A	802 T
Primary	475 A	101 A	637 A	862 A	3,050 T
Chief	42 A	27 T	131 T	156 T	180 T
Main	1,882 T	472 T	1,625 T	1,404 A	3,678 A
Major	2,007 T	252 A	2,192 T	2,115 T	4,330 A

Given that spoken language and academic writing perhaps represent the two ends of the formality scale shown by the five registers with spoken being the least formal and academic writing being the most formal, it is sensible to focus on how the five adjectives fare in these two registers. Based on the detailed results of the HCFA test reported in Table 10 in the Appendix, *main* and *major* appear to be the least formal because they both are types in the spoken register and antitypes in the academic writing register, while *primary* and *principal* are much more formal as they are all antitypes in the spoken register and types in the academic writing register.

Figure 3: The five adjectives' formality scale when modifying abstract/dual nouns

less important ← ***main*** < ***major*** < ***chief*** < ***principal*** < ***primary*** → more important

Chief is in the middle as it is an antitype in both registers. Figure 3 below shows the five adjectives' formality scale determined by the q values of *main* and *major* in the spoken register and the *q* values of *primary* and *principal* in the academic register.

Conclusion

Through a close corpus-based analysis of the various distribution patterns of the five near-synonymous adjectives in question, this study has identified their internal structure (as illustrated in Figures 1, 2, and 3) and delineated their fine-grained semantic and usage differences, information not available or at least not completely clear in the past. The study has also yielded some interesting findings that challenge some of the existing descriptions of these adjectives in reference works. It has further made important contributions in addressing the issues in the two major theoretical fronts that the paper set out to deal with: (i) contributing to the development of a more adequate description of the near-synonyms and (ii) testing and exploring the theory and applicability of the corpus-based behavioral profile approach to the study of synonymous adjectives, including which properties or co-occurrents of adjectives best capture the essence of adjectival meaning and help form a BP template for analyzing adjectives.

On the former front, as has been shown in the study, the coverage of the near-synonyms in the existing reference materials is inadequate and, in some instances, inaccurate. The results of the study can thus help reference material writers address the inadequacies and develop a more accurate description of this set of near-synonyms. Lack of adequate and appropriate coverage of the types of information that this study has uncovered has been a fairly common problem in dictionaries. As Hanks (1996) points out, there are many words that have several related senses and their distributional patterns across the senses are imbalanced with some used far more extensively than others as has been shown in the case of the adjectives in this study. According to Hanks (1996: 80), dictionaries often "give no hint of it [the imbalance in the distribution patterns of a

word's different senses], giving equal weight to all senses, even the rarest." Now with the information about the adjectives yielded in this study, reference material writers will be able to give a more adequate coverage of the different distributions in the adjectives' various senses. Additional useful information gained in this study includes the following: (i) *chief* and *principal* are not frequently used to modify abstract/dual nouns and, when they do, they are used mostly in formal registers such as academic writing; (ii) *principal* is used mostly in non-position titles to mean highest degree of contribution or share rather than authority or power; (iii) *major* and *primary* can be used as predicative adjectives; and (iv) the meanings of the adjectives, especially in the case of *primary*, are context-dependent.

In terms of testing and exploring the theory and applicability of the corpus-based behavioral approach in near-synonym research, the study has yielded the following important findings:

i. The fact that this corpus-based behavioral profile analysis of the five adjectives resulted in a successful delineation of their internal structure and their fine-grained semantic differences offers support for the assumed correlation between the distributional and semantic similarity of near-synonyms.
ii. That this study has produced information useful for the description of the five synonymous adjectives indicates that corpus-based BP research is indeed an appropriate and productive approach for research examining synonymous adjectives in a set.
iii. The success of the study also indicates that the choice of the adjectives' co-occurrents for examination in this study was appropriate. The examination of the semantic types of the nouns the adjectives modify and a few other co-occurring syntactic properties such as the number/definiteness of the nouns and ability of the adjectives to collocate with degree adverbs has resulted in an effective identification of the distinctive semantic patterns of the five synonymous adjectives in the set. This result of the study appears to concur with the findings of the other two existing corpus-based BP studies on synonymous adjectives (Gries, 2001; Gries & Otani, 2010) as all three studies seem to show that the types of nouns adjectives modify and the relevant accompanying syntactic features of the adjectives constitute the best co-occurrents for capturing the essence of adjectival meaning and help form the most basic template for the analysis of adjectives, especially attributive adjectives. This finding also looks truly logical considering

the fact that the function that adjectives, especially attributive adjectives, typically fulfill is none other than modifying nouns. As for what other syntactic features/co-occurrents besides the semantic types of nouns are relevant for analyzing adjectives, it will depend on the types of adjectives being examined. For example, in this study the adjectives are basically attributive so the syntactic position of the adjectives themselves (i.e., whether they are attributive or predicative) is not important or truly relevant, but in examining adjectives that can function both attributively and predicatively the issue becomes highly relevant as shown in Gries & Otani's (2010) study.

iv. The co-occurrents essential for examining the semantics of synonymous adjectives differ from those that are crucial for the study of synonymous verbs (cf. Hanks, 1996; Divjak & Gries, 2006). In corpus-based BP studies on synonyms, the issue of how many co-occurring properties should be examined and in what manner or sequence may vary from study to study. For example, while Divjak & Gries (2006) and Gries & Otani (2010) included many more different contextual features and used more advanced programs to explore the data, this study, like Hanks' (1996), examined fewer co-occurrents, focusing mostly on the key co-occurrents and their accompanying syntactic properties.

v. Last but not least, this study has also shown that sometimes the examination of co-occurrents alone may not enable us to identify all the relevant semantic and usage information of the items being examined; a scrutiny of the tokens in context may be necessary as evidenced by the way in which such a scrutiny in this study has lead to the findings regarding (a) the uses of *major* and *primary* that imply no comparison and (b) the significant meaning variations of the two adjectives according to the nouns they modify. In short, all the above findings indicate that the micro-procedures used in the corpus-based BP approach may and can indeed need to vary depending on the lexical items being examined and questions being investigated. In other words, the process of developing micro-procedures for a corpus-based BP study is a dynamic one. This finding also provides strong evidence for what Hanks (1996) has argued for in corpus-based BP research, namely the need to slowly and methodically tease out the lexical items' usage patterns by developing micro-procedures appropriate for each specific study. In fact, it is indeed through a slow, methodical, and laborious teasing-out process that this study has attained its main objectives.

Notes

1. I use the term "near synonyms" instead of "synonyms" because, as many linguists (Stubbs, 2001; Taylor, 2003) have argued, true synonyms are rare unless we take cross-dialect synonyms into account. Thus all synonyms are truly near-synonyms, also known as plesionyms. However, in citing other scholars' work, I will use the term "synonyms" if it was used in the original work or when it is necessary for consistency in the discussion. So, the terms "near-synonyms" and "synonyms" are used interchangeably in this paper.
2. It is important to note that *key* and *leading* are also listed in a few thesauri as synonymous with the set (in certain uses). The reasons they were not included in the set under examination here are as follows: The *OED* does not even list *key* as an adjective. It only includes the adjectival use of *key* as one of the meanings in its noun entry: "Passing into *adj.* in the sense of 'dominant,' 'controlling,' 'chief,' 'essential;' esp. designating some person or thing that is of crucial importance to others" (*OED online*, 2008). Thus *key* is not yet a fully-fledged adjective although it is in the process of becoming one. Regarding *leading*, as a participle-turned adjective, its usage differs from the adjective group in important ways. For example, it is never used to modify many of the nouns that all the adjectives in the set do, such as "focus" (*"leading focus") and "purpose" (*"leading purpose").
3. Miller & Charles' study was not really a corpus-based study even though the sentences used in the second experiment in their study came from the Brown Corpus. Despite this shortcoming, the findings of their study regarding the correlation between the lexical items' meanings and their distributional patters contributed significantly to the behavioral profile studies on synonyms, as explained by Gries & Otani (2010).
4. Since the completion of the data analysis for this study, the corpus has grown to 400 million words with the 2008 and 2009 data added.
5. There are other procedures that may be used to explore and identify the semantic and usage differences among the adjectives, for instance, the method that Gries & Otani (2010) used in their BP study of a set of adjectives and their antonyms described earlier. Gries & Otani's method is more systematic and comprehensive but it is not adopted in this study for the following reasons: First, the method requires accessibility to the entire data of the corpus used, which I do not have. Second, the annotation of the relevant data used in the method is very time consuming, making the method not quite practicable when dealing with the vast amount of data this study has to examine. Third, some of the annotated features they examined, such as the dependent vs. independent clause appearance of the adjectives, do not appear to be truly relevant for the purpose of the present study.
6. I owe this explanation of the difference between MI and T-score here to an anonymous reviewer, who also provided the primary references cited for this issue.

7. To illustrate my point, items that have made the top-ten list of one or two of the adjectives but not the top-ten lists of the other adjectives may appear in the latter adjectives' next top-ten lists, i.e., their top-twenty lists. For example, *focus* is now only on the top-ten list of *primary*, but it is on the next top-ten list of *main*; similarly, *factor* is now only on the top-ten list of *major*, but it is on the next top-ten list of *principal*.
8. An explanation is necessary for the classification of three of the types. The dual nouns are abstract by nature but they can refer to both abstract and concrete things. For example, a *source* can be abstract (e.g., courage as one's source of success) as well as concrete (e.g., the water source of a river). Regarding institution nouns, many of them (e.g., *city*, *school*, and *corporation*) are also physical entities. My main reason for not classifying them as concrete nouns is that, unlike true concrete nouns like *road* and *street*, the referents of the tokens of these nouns are often not the physical entities but the business, administration, etc. of the institutions in question (e.g., primary school education; the mayors of major cities). Finally, the nouns in the non-position title category are not really titles in a true sense and the term "non-position title" was used for lack of a better one.
9. I would like to thank one of the anonymous reviewers for suggesting the use of HCFA for my data analysis and also thank Professor Stefan Th. Gries for letting me use his HCFA 3.2 for R program and for the generous help he gave me concerning the use of the program. Thanks should also go to both Jamie DeCoster (a statistics consultant at our school) and one colleague in the field who had read earlier versions of the paper, for their suggestions and assistance in the statistical analysis of the data.

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APPENDIX

Table 7: Type classification of the top 50 nouns modified by the five adjectives

Abstract	Concrete	Dual	Institution	Position Title	Non-Position Title
cause	color*	Character	airlines	correspondent	author
change	course*	component	care*	counsel	owner
concern	dish	part	city	curator	sponsor
effect	entrance*	role*	corporation	deputy	
factor	residence*	source	league	economist	
focus	road		power*	engineer	
goal	street		school	executive	
issue				investigator	
objective				justice	
obstacle				negotiator	
problem				operating officer	
purpose				prosecutor	
reason				scientist	
responsibility					
thing*					

* Here are the explanations for the reason(s) for classifying the nouns with an asterisk the way they are. The word "thing" when modified by the adjectives is always used in the abstract sense as "issue" (i.e., "main thing"="main issue"). The tokens of "color" are mostly in "primary colors" and they refer to specific colors we can see and touch; hence it is classified as a concrete noun even though it is not one in the typical sense. All the tokens of "course" here refer to a food item, i.e., a main dish. All the tokens of "entrance" (e.g., the "main entrance") are references to a specific location for entrance. All tokens of "residence" ("main/principal residence") refer to a dwelling. "Role" is classified as dual because some of the tokens have an abstract referent (e.g., "Dedication played a major role ...") and some have a concrete human referent (e.g., "The senator played a principal role ..."). "Care" is classified as an "institution" because all the tokens of care are "primary care," a term used to refer to a type of medical/health service and group or organizations of professionals in such service. The reason for classifying "power" as institution is that the majority of the referents of the "power" tokens are "countries" (e.g., "China and Japan are more than regional powers").

Table 8: HCFA test of distributions of the types of nouns modified by the five adjectives

Adjective	Noun type	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
principle	abstract	740	844.7121	12.9803	<	0.000456076953029305	***	0.002
primary	abstract	4,001	2,817.8624	496.7647	>	1.43821595782672e-102	***	0.023
chief	abstract	420	4,599.3264	3,797.6798	<	0	***	0.086
main	abstract	7,422	5,487.0158	682.3680	>	9.5727888068971e-152	***	0.040
major	abstract	7,746	6,580.0832	206.5874	>	5.27210483824205e-50	***	0.025
principle	concrete	70	243.7860	123.8856	<	1.30055305250477e-38	***	0.003
primary	concrete	440	813.2421	171.3016	<	2.09621062853825e-46	***	0.007
chief	concrete	1	1,327.3771	1,325.3779	<	0	***	0.025
main	concrete	5,157	1,583.5664	8,063.7147	>	0	***	0.069
major	concrete	199	1,899.0284	1,521.8817	<	0	***	0.033
principle	dual	557	273.6620	293.3561	>	2.57092292269578e-50	***	0.005
primary	dual	1,124	912.9048	48.8125	>	3.30190100331983e-11	***	0.004
chief	dual	116	1,490.0469	1,267.0775	<	0	***	0.026
main	dual	1,639	1,777.6323	10.8115	<	0.000747900874400848	***	0.003
major	dual	3,150	2,131.7541	486.3716	>	1.44129764545342e-97	***	0.020
principle	institution	38	334.3696	262.6882	<	6.71445510248535e-94	***	0.006
primary	institution	1,705	1,115.4183	311.6379	>	8.96138864061364e-61	***	0.011

(continued)

Adjective	Noun type	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
chief	institution	16	1,820.5903	1,788.7309	<	0	***	0.035
main	institution	161	2,174.9719	1,861.9062	<	0	***	0.039
major	institution	6,127	2,604.6500	4,763.3845	>	0	***	0.069
principle	position	421	496.8382	11.5761	<	0.00754746574865111	**	0.001
primary	position	55	1,657.3949	1,549.2201	<	0	***	0.031
chief	position	11,465	2,705.2067	28,365.2923	>	0	***	0.173
main	position	4	3,227.3229	3,219.3279	<	0	***	0.064
major	position	12	3,870.2374	3,846.2746	<	0	***	0.078
principle	nonposition	395	27.6321	4,884.1447	>	1.94726364068943e-298	***	0.007
primary	nonposition	84	92.1776	0.7255000	<	0.213519229127572	ns	0
chief	nonposition	75	150.4527	37.8399	<	3.46280798338134e-11	***	0.001
main	nonposition	44	179.4907	102.2768	<	5.63249331289447e-33	***	0.003
major	nonposition	67	215.247	102.1021	<	1.51422411427342e-31	***	0.003

Table 9: HCFA test of the number/definiteness of the adjectives' abstract/dual noun tokens

Adjective	Number/ Definiteness	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
principle	sing/def	665	608.3829	5.2689	>	0.0688208088847296	ns	0.002
primary	sing/def	3,442	2,403.9801	448.2089	>	1.34748945302163e-96	***	0.042

(continued)

Adjective	Number/ Definiteness	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
chief	sing/def	362	251.4211	48.6343	>	2.77995160043486e-10	***	0.004
main	sing/def	6,263	4,250.2369	953.1740	>	1.06347054122964e-221	***	0.089
major	sing/def	1,893	5,110.9790	2,026.1067	<	0	***	0.148
principle	sing/indef	167	330.7675	81.0835	<	1.24328475676926e-22	***	0.006
primary	sing/indef	642	1,307.0035	338.3538	<	2.22692774097400e-95	***	0.026
chief	sing/indef	62	136.6934	40.8147	<	6.40983463978408e-12	***	0.003
main	sing/indef	439	2,310.7822	1,516.183	<	0	***	0.076
major	sing/indef	5,554	2,778.7533	2,771.7445	>	0	***	0.115
principle	plur/def	343	236.173	48.3205	>	3.14806749205905e-10	***	0.004
primary	plur/def	880	933.2203	3.0351	<	0.154250498770475	ns	0.002
chief	plur/def	92	97.6012	0.3214	<	0.613609434217707	ns	0
main	plur/def	1,688	1,649.9335	0.8783	>	0.509435920631259	ns	0.002
major	plur/def	1,898	1,984.0719	3.7339	<	0.112086140986655	ns	0.003
principle	plur/indef	122	121.6766	9e-04	>	0.500407988481401	ns	0
primary	plur/indef	161	480.7960	212.7087	<	3.91621638537721e-64	***	0.012
chief	plur/indef	20	50.2842	18.2390	<	7.13819243571998e-06	***	0.001
main	plur/indef	671	850.0474	37.7132	<	4.49821402504024e-10	***	0.007
major	plur/indef	1,551	1,022.1958	273.562	>	1.06025191095164e-54	***	0.020

Table 10: HCFA test of the cross-register distributions of the adjectives' abstract/dual noun tokens

Adjective	Register	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
principle	spoken	160	220.0298	16.3777	<	0.000108817596848811	***	0.002
primary	spoken	475	869.4315	178.9402	<	1.25360129041112e-48	***	0.015
chief	spoken	42	90.9298	26.3294	<	9.63842195097183e-08	***	0.002
main	spoken	1,882	1,537.1550	77.3624	>	1.98322762778767e-17	***	0.014
major	spoken	2,007	1,848.4539	13.5989	>	0.00058516208965837	***	0.006
principle	fiction	26	42.3097	6.2871	<	0.0194141876920140	*	0.001
primary	fiction	101	167.1837	26.2004	<	2.49677349694905e-07	***	0.002
chief	fiction	27	17.485	5.1779	>	0.0620581990527429	ns	0.0
main	fiction	472	295.5808	105.2969	>	2.95177581950404e-20	***	0.007
major	fiction	252	355.4408	30.1035	<	5.01309310019635e-08	***	0.004
principle	newspaper	131	227.2581	40.7714	<	4.2203501258102e-11	***	0.004
primary	newspaper	637	897.9937	75.8554	<	1.42015976286769e-19	***	0.010
chief	newspaper	131	93.917	14.6422	>	0.00100780033967878	**	0.001
main	newspaper	1,625	1,587.6528	0.8785	>	0.170127326647113	ns	0.001
major	newspaper	2,192	1,909.1784	41.8966	>	4.48139854505671e-10	***	0.011
principle	magazine	178	227.2099	10.6580	<	0.00194481412520792	**	0.002
primary	magazine	862	897.8033	1.4278	<	0.229843099467789	ns	0.001

(continued)

Adjective	Register	Freq	Exp	Count.chisq	Obs-exp	P.adj.holm	Dec	Q
chief	magazine	156	93.8971	41.0744	>	4.13196848638503e-08	***	0.002
main	magazine	1,404	1,587.3162	21.1708	<	8.0599548785688e-06	***	0.007
major	magazine	2,115	1,908.7735	22.281	>	7.5077749044539e-06	***	0.008
principle	academic	802	580.1925	84.797	>	1.51853284486311e-17	***	0.008
primary	academic	3,050	2,292.5878	250.2296	>	3.591497299049e-55	***	0.031
chief	academic	180	239.7711	14.9000	<	0.000243262991994126	***	0.002
main	academic	3,678	4,053.2952	34.7486	<	7.8382551357898e-10	***	0.016
major	academic	4,330	4,874.1534	60.7496	<	2.31769275612737e-17	***	0.025

Chapter II

Research and Understanding of Synonymous Adverbs: A Corpus-Based Behavioral Study of *actually, genuinely, really,* and *truly*

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INTRODUCTION

Synonymy is an important, but also intricate, linguistic feature (Divjak & Gries, 2006; Edmonds & Hirst, 2002; Taylor, 2002).[1] Synonyms convey the same or nearly the same meaning; however, they are not completely and indiscriminately interchangeable because synonyms in a set typically express the same concept in different manners, for different contexts, and/or from different perspectives. In fact, as Edmonds & Hirst (2002, p.107) state, if two synonyms were truly interchangeable in any context without a change in meaning or communicative effect, one of them would "fall into disuse" or "take on a new nuance of meaning." Hence, synonyms differ in shades of meaning and vary in their connotations, implications, and register (DiMarco, et al., 1993). Because of their subtle nuances and variations in meaning and usage, synonyms offer an array of possible word choices to allow us to convey meanings more precisely and effectively for the right audience and context. The importance of understanding synonymy also lies in the fact that the very existence of this complex linguistic phenomenon "inherently affects the structure of lexical knowledge" (Edmonds & Hirst, 2002, p.106). However, despite its importance and intricacy, synonymy has not garnered the scholarly attention it deserves until quite recently (Divjak, 2006; Edmonds & Hirst, 2002; Taylor, 2002).

Thanks to the advancements in corpus linguistics, there have been several corpus-based behavioral profile (BP) studies on synonymous verbs (Divjak, 2006; Divjak & Gries, 2006; Hanks, 1996) and synonymous

adjectives (Gries, 2001; Gries & Otani, 2010; Liu, 2010). In simple terms, a BP study is a lexical research method that uses corpus data to examine the distributional patterns of lexical items, such as the linguistic contexts a word is typically used in and the words/phrases it usually collocates with, so as to identify its unique semantic and usage patterns (a detailed discussion of this approach will be given in the next section). These studies have significantly enhanced our understanding of the synonyms examined and synonymy in general. However, it seems that, so far, there has not been any corpus-based BP inquiry of synonymous adverbs or nouns. It will be interesting and meaningful to conduct examinations of synonyms in the latter two parts of speech as well because, as Hanks (1996, p.92) notes on the limitations of BP research focused on verbs only, "there is no reason to believe that the procedures that help us to use and understand verbs are relevant to, say nouns and adverbs." To this end, this study aims to examine the meaning and usage differences among four synonymous adverbs, *actually*, *genuinely*, *really*, and *truly*, using a corpus-based BP approach. The rationale for examining synonymous adverbs rather than synonymous nouns, the other unexamined lexical category, is that, among the four parts of speech, adverbs are a unique category noted for their extensive semantic and syntactic variability (i.e., their ability to occupy various positions in a sentence), an issue we will return to below. Thus, understanding the use of synonymy in adverbs is of special importance in our grasp of synonymy in general. Furthermore, given that adverbs have unique and highly variable usage patterns based on their possible positions in a sentence, to examine synonymous adverbs using a corpus-based BP approach will allow us to ascertain the viability and effectiveness of the approach in the study of synonyms in this lexical category. The selection of the four specific adverbs for this study is motivated by (i) the complex internal semantic structure of the synonym set, (ii) the notorious elusiveness and variability of the meanings and sentence positions of the individual adverbs (especially *actually* and *really*), and (iii) lack of precise information in current reference materials regarding the use of the adverbs.

CORPUS-BASED BP APPROACH TO THE STUDY OF SYNONYMS

The BP approach is based on the theory first advanced by Firth (1957, pp.7, 11) that "the complete meaning of a word is always contextual" as

we "know a word by the company it keeps." The theory was later fully developed by Sinclair (1966, 1987, 2004) and associates. Via numerous studies, Sinclair and his associates have shown that lexical items tend to occur in particular linguistic contexts, e.g., they tend to co-occur or collocate with certain other words, phrases, and/or grammatical structures, and these distributional tendencies help define their meanings. Firth and Sinclair's pioneering work has shaped contemporary research on lexical semantics, leading to experimental and corpus studies that established a close correlation between lexical semantics and their distributional patterns (e.g., Church, et al., 1994; Geeraerts, 1986; Justeson & Katz, 1995; Miller & Charles, 1991). Based on an experimental study involving sentences from the Brown Corpus, Miller & Charles (1991) found that the more two words are judged to be substitutable in the same linguistic context (i.e., the same location in a sentence), the more synonymous they are in meaning. Employing a "lexical substitutability" test in a corpus study of the near-synonyms *ask for*, *request* and *demand*, Church, et al. (1994) produced the same finding: the substitutability of lexical items in the same linguistic context constitutes a good indicator of their semantic similarity. Geeraerts (1986) and Justeson & Katz (1995) found that the most effective way to disambiguate synonymous adjectives was to examine their noun collocates — the nouns the synonymous adjectives typically modify.

It is clear from these groundbreaking studies that the contextual preferences of lexical items offer us clues to their distinct meanings, for the contexts in which certain words are used over others effectively demonstrate these lexical items' fine-grained semantic differences. Built on this understanding with a firm belief that the meaning of words can be defined "in terms of their significant collocates" (Gries, 2001, p.82), corpus-based BP studies on synonyms focus on the collocates and other contextual information of the lexical items in a given synonym set (Divjak, 2006; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996; Liu, 2010). In what appears to be the first BP study, Hanks (1996) examined the syntactic and collocational patterns of the verbs *urge* and *incite*, including the types of subjects (such as animate or inanimate) and the types of complementation structures each verb typically takes (such as a simple object complement vs. a complement involving an object noun plus an infinitive complement as shown in "Rice *urged* the president to resolve the issue"). He also investigated, among other things, the semantics of the complement structures (i.e., whether the instances of the typical complement structure of

a verb are positive or negative in meaning). The results of the examination helped uncover the behavioral profiles of the verbs, which in turn revealed the primary and secondary meanings of each verb and differentiated it from its synonyms. For instance, in the case of the verb *urge*, its behavioral profile distinguishes it from its near-synonyms like *ask*, *request*, and *order*, because the latter verbs do not share the same complement collocation patterns, among other profile features, with the verb *urge*.

In recent years, Gries and associates (Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010) have developed a more sophisticated BP approach in examining both adjectives and verbs. In this approach, they first imported all the relevant corpus data into a spreadsheet, then manually annotated all the linguistic and contextual features they considered relevant (often dozens), and finally analyzed the annotated data using a statistical program designed specifically for BP research called "R script BP 1.0". The types of linguistic and contextual features they annotated for synonymous verbs included, among others, tense/aspect, the types of complements, and clause types. For synonymous adjectives, the features they annotated included the semantic types of their modified nouns (e.g., whether a modified noun is abstract/concrete or singular/plural), the syntactic function of the adjectives themselves (i.e., whether they are in the attributive or predicative positions), and the types of clause they are in (dependent or independent). By examining the various distributional features of the synonyms, such corpus-based BP studies have been able to effectively identify the internal semantic structures of the synonym sets being examined, including the fine-grained semantic differences among the synonyms in each set, an important type of information in the study of synonymy that traditional research methods had difficulty uncovering.

Yet this sophisticated procedure, specifically the manual annotation of dozens of linguistic and contextual features, may not be feasible if the corpus data used in a study is too large or if a corpus used does not allow access to its entire data as in the case of some free online mega corpora such as the Corpus of Contemporary American English (COCA), which is used in this study. Effective BP study of synonyms, however, can still be conducted as evidenced by Liu (2010). Using the query functions offered by COCA plus some manual checking and tabulation of the results, Liu did an effective BP study of the five synonymous adjectives *chief*, *main*, *major*, *primary*, and *principal*. Specifically, he examined the following key features of the distributional patterns of the adjectives: (i) the nouns each

of the adjectives typically modifies, (ii) the semantic type (e.g., abstract vs. concrete) and the singularity/plurality feature of the nouns, (iii) whether each instance of an adjective-noun phrase is preceded by a definite or indefinite article, and (iv) the frequencies of the adjectives in each of the five registers of COCA (spoken, fiction, magazine, newspapers, and academic writing). The rationales for focusing on these features include the following. The reason for a focus on the nouns each of the adjectives typically modifies is that, as research has shown (Geeraerts, 1986; Justeson & Katz, 1995), the typical nouns an adjective modifies provide the most revealing information about the meanings of an adjective, and hence they constitute the best means to differentiate synonymous adjectives. The rationale behind examining the abstract-vs.-concrete, the singular-vs. -plural, the definite-vs.-indefinite and the other oppositional features was that they are particularly relevant and effective for distinguishing the five adjectives. For example, if one of the five adjectives is used mostly with a definite singular noun (e.g., the *main reason we lost was unpreparedness*), then it carries a meaning of more importance than the adjective that is used mostly with indefinite plural nouns (e.g., *the major reasons we lost were ...*). The results of Liu's (2010) study show that indeed, in the five adjective set, while *main* is used most often with definite singular nouns (hence indicating more importance), *major* occurs most often with indefinite plural nouns (hence expressing least importance in the set).

It is thus clear that different micro-procedures have been used in the existing BP studies of synonymy due not only to the access level and size of the corpus data but also, and more importantly, to the fact that "the way synonyms differ often varies from synonym to synonym and from set to set" (Liu, 2010, p.61). In other words, there are no prescribed procedures for conducting a corpus-based BP study.[2] A researcher needs to look closely at the features of the synonyms being examined to determine the best micro-procedures to adopt. Furthermore, as noted earlier, the size of the corpus used and the accessibility of the corpus data may also affect the procedures.

As already mentioned in the introduction, although there have been BP studies conducted on synonyms in verbs and adjectives (e.g., Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996; Liu, 2010), there have been no such studies of adverbs, a unique category of words due to their high semantic and positional variability. It is thus especially meaningful to test the effectiveness of the BP approach in the study of synonymous adverbs. Because of their highly complex semantic and usage

patterns, as will be shown below in the review of the research on adverbs, *actually*, *genuinely*, *really*, and *truly* constitute an ideal set for a corpus-based BP study for this purpose. In short, by using a corpus-based BP approach, we strive not only to test the viability of the BP approach in the study of synonymous adverbs, but also to uncover semantic and usage differences among the four adverbs, test the accuracy of the existing descriptions of the adverbs, and, in turn, yield a clear delineation of the internal semantic structure of the four synonyms.

THE UNIQUE NATURE OF ADVERBS: REASONS FOR STUDYING SYNONYMOUS ADVERBS

Like adverbials in general, adverbs are unique linguistic elements thanks to "their enormous semantic and syntactic flexibility, as well as their elusiveness" (Hasselgård, 2010, p.xvii). This unique nature of adverbs can be seen in the following two examples from Greenbaum's (1969, p.6) classic book on adverbs:

1. *Strangely*, he answered the questions.
2. He answered the questions *strangely*.

Because of the positional variation of *strangely* in the two sentences, the meanings of the two sentences differ significantly, with the first meaning "it is strange that 'he' answered the questions" and the latter indicating "'he' answered the questions in a strange manner." Of course, as Hoey (2005) has shown, words of other parts of speech can also occur in different sentence positions and their positional variations also involve meaning changes. Adverbs are, however, special in that they have a much higher positional variation rate than words of other parts of speech because they can modify many different structures including verbs, adjectives, other adverbs, and clauses.

Furthermore, adverbs also vary in form. Quirk, et al. (1985) identify three types of adverbs: simple (e.g., *again* and *also*), compound (e.g., *furthermore* and *moreover*), and derivational (i.e., those derived from adjectives or participle adjectives, e.g., *actually* and *surprisingly*). The latter type constitutes a very large group of adverbs and the four adverbs examined in this study belong to this type. While many *-ly* adverbs mean "in 'an adjective' manner/way" or "to 'an adjective' degree" (e.g., *slowly* meaning "in a slow way"), some express different meanings (Huddleston & Pullum, 2002, p.565), as is shown in the following COCA example:

3. I can *hardly* believe how clear and crisp the air becomes.

Here, *hardly* means neither "in a 'hard' manner/way" nor "to a 'hard' degree." There is no uniform, standard semantic relationship between adjectives and their *-ly* adverb counterparts.

Because of the large semantic, positional, and formal variations, many grammarians consider adverbs a "heterogeneous" class (Greenbaum, 1996, p.141; Huddleston & Pullum, 2002, p.563). To help better understand the meanings and usages of adverbs, linguists have tried to classify adverbs into categories based on their semantic functions and syntactic distributions. Still, as Hasselgård (2010, p.21) notes, "there are hardly any two grammars that use the same classification scheme and/or terminology." Greenbaum (1969, 1996) provides arguably the most influential classification, which categorizes adverbs into "adjuncts," "conjuncts," and "disjuncts" based on the adverbial's intended meaning and integration into the sentence.

Adjuncts are adverbs used to show manner, place, frequency, degree of intensity, etc., and as such they typically modify a constituent of a clause such as the verb or the predicative adjectival, as shown by *actively* and *locally* in the following COCA examples:

4. ... she discovered verbal and physical abuse was also going on *locally*.
5. The president, too, came to understand that he needed to be more *actively* engaged in foreign policy.

"Conjuncts" are adverbs used to provide connections in discourse, usually between sentences, as illustrated by *however* and *finally* in the following COCA example:

6. *However*, major knowledge gaps remain in our understanding of new drug using behaviors and what influences their spread across time and geography and across age, gender, and ethnic groups. *Finally*, there is a need to improve feedback ...

"Disjuncts" are adverbs that speakers/writers use to express their attitude/evaluation/view about what they are saying (e.g., *fortunately* and *surprisingly*) or to comment on the "form"/"style" of what is being said (e.g., *frankly* and *honestly*). Greenbaum (1969, p.94) calls those of the former type "attitudinal disjuncts," but Quirk, et al. (1985, p.615) label them "content disjuncts" because they believe these disjuncts "make observations on the actual content of the utterance and its truth conditions". Both Greenbaum and Quirk, et al. call disjuncts of the latter type "style disjuncts". Disjuncts are

labeled as such because they typically modify the whole clause/utterance and are less integrated into the clause they modify; they are set off from the rest of the sentence by a pause in spoken language and by commas in writing, as can be seen in the following two COCA examples:

7. *Actually,* we got this affidavit today.
8. Paris pioneered this, *actually,* a few years ago.

Thus, it is clear that, in terms of the degree of integration into the sentence in which they appear, disjuncts and conjuncts show much less integration than adjuncts due to the fact that, while the former two categories typically modify the entire clause, the latter modifies only a constituent of the clause.[3]

Greenbaum's classification system has been used with modifications by a few other grammarians (e.g., Quirk, et al., 1985; Hoye, 1997). Quirk, et al. add a new category called "subjuncts," which, they argue, differ from the other types in some important but subtle manners. The following are two examples that Quirk, et al. (1985, p.569) offer in illustrating the difference between adjuncts and subjuncts.

9. He spoke *kindly* to the new students.
10. Will you *kindly* take your seat?

In Example 9, *kindly* functions as an adjunct of manner modifying the verb "spoke," but the *kindly* in Example 10 does not modify the verb phrase "take your seat" because one cannot really sit in a kindly manner; *kindly* here really means "Please be kind and sit down". Like disjuncts, subjuncts can also appear sentence initially or finally but the two differ in that while a disjunct, as shown above, functions as a "superordinate" syntactically and semantically by modifying the entire clause (i.e., expressing the speaker/writer's view, evaluation, style, etc. regarding the utterance), a subjunct plays a "subordinate role" by focusing on a constituent of the clause (Hoye, 1997, p.200; Quirk, et al. 1985, p.566). The following example from Quirk, et al. (1985, p.574) illustrates the point:

11. *Resentfully,* the workers have stood by their leaders.

Here, *resentfully*, though used sentence initially, does not express the speaker/writer's attitude but that of the "workers" (the subject of the sentence). That is, although the workers stood by their leaders, they did so feeling resentful about it. Of course, the differences between subjuncts and the other two categories are often very subtle, as can be seen in the

two examples that Quirk, et al. (1985, p.573) use to illustrate differences between adjuncts and subjuncts.

12. Leslie greeted the stranger *casually*.
13. *Casually,* Leslie greeted the stranger.

According to Quirk, et al., *casually* in Example 12 is an adjunct as it modifies the verb "greet" but in Example 13, it is a subjunct because it is used to mean that "Leslie was casual, offhand when he greeted the stranger". Yet to some, there is little difference between the two sentences. Because of this lack of clear distinction between subjuncts and adjuncts, most grammarians (e.g., Biber, et al., 1999; Hasselgård, 2010; Huddlston & Pullum, 2002) do not differentiate subjuncts from adjuncts.

In fact, some grammarians, e.g., Huddleston & Pullum (2002), not only do not recognize subjuncts, but also do not distinguish conjuncts and disjuncts from adjuncts. Instead, they use adjuncts to refer to all the different types of adverbs. Still others, e.g., Carter & McCarthy (2006), while recognizing the unique features and functions of conjuncts and disjuncts, treat them simply as subcategories of adjuncts. Furthermore, some grammarians (Biber, et al., 1999; Halliday, 1994) do not use any such technical terminology for classification of adverbs. Instead, they use common terms: "circumstance," "linking," and "stance" (Biber, et al., 1999, p.763) and "circumstantial," "modal," and "conjunctive." Yet, except for terminology, their classifications differ little from Greenbaum's in substance, for "circumstance" is synonymous to "adjunct," covering adverbs of manner, place, etc., "linking"/"conjunctive" are equivalent to "conjunct," and "stance"/"modal" are essentially "disjunct" expressing attitude, viewpoint, and so on.

It is very important to note that whichever system is used, the classification of adverbs is not always straightforward in practice, especially with some specific adverbs, a point noted by all the aforementioned grammar books. Finally, because Greenbaum's classification system (i.e., the classification of adverbs into adjunct, conjunct, and disjunct) is the most widely used and also arguably the most sensible (neither too complex nor too simple), it is adopted in this study.

EXISTING DESCRIPTIONS OF THE EXAMINED ADVERBS

Regarding the meanings and classification of the four adverbs

of concern in this study, existing dictionaries offer very little helpful information. All of the dictionaries and thesauri reviewed (e.g., *The American Heritage College Thesaurus*, 2004; *Longman Synonym Dictionary*, 1986; *Oxford Dictionary of American English*, 2005; *Oxford English Dictionary*, 2010; *Webster's New World Dictionary and Thesaurus*, 1999) provided the same basic definition for the adverbs in the set: an emphasis on fact, truth, and reality. Usually the words were defined in terms of the other adverbs in the set, with *actually* and *really* being most closely related. For example, the *Oxford English Dictionary* (*OED online*, 2010) defines *actually* as meaning "In act or fact; as opposed to *possibly*, *potentially*, *theoretically*, *ideally*; really, in reality [italics original]" and "As a matter of fact, in truth, truly". Here the definition of *actually* is literally given in terms of *really* and *truly*, two other adverbs in the synonymous set being examined. Similarly, the definitions for *truly* are effectively identical to those of *actually* and *really*, only in some cases with the added senses of "accuracy" and "genuineness". Of course, such a lack of clarity in definition and description in dictionaries is not limited to this set of adverbs, as other studies (Church, et al., 1994; Liu, 2010) have also emphasized the inadequacy of existing reference materials in distinguishing among synonymous terms.

While dictionaries are generally not very helpful, a few grammar reference books provide some very useful information. Specifically, Greenbaum's (1969) and Hoye's (1997) treatises on adverbs and the comprehensive grammar books by Biber, et al. (1999), Carter & McCarthy (2006), and Quirk, et al. (1985) offer some detailed discussion of the various meanings and functions of *actually* and *really*, the two much more frequently used adverbs in the set. First, they all seem to note that these two adverbs may be used to modify either a constituent of a clause (as adjunct/circumstance adverbials) or the entire clause (as disjunct/stance/modal adverbials). When used in the first case, the adverbs are generally considered intensifiers (Greenbaum, 1969, 1996; Biber, et al., 1999) although Huddleston & Pullum (2002, p.582) call them "degree adverbs" and Quirk, et al. (1985, p.583) label some of them as "emphasizers" when the words/phrases modified by these adverbs are not "gradable," e.g., *said* in *He* actually/really *said it*. Furthermore, the grammarians do not seem to agree on how to distinguish the adjunct/circumstance and the disjunct/stance uses of the adverbs. Greenbaum and Quirk, et al. emphasize the position of the adverbs as a key criterion, with the disjunct function marked by the separation of the adverbs from the rest of the clause by commas or

an independent tone in speech. However, for Biber, et al. and Carter & McCarthy, such syntactical features are not important; instead, meaning is the key. Yet, as already noted above, differentiation by meaning alone in this matter is very difficult. In fact, Biber, et al. (1999, pp.857–858) discuss at some length the difficulty in precisely defining the semantic functions of *really*. For this reason, this study follows Greenbaum and Quirk, et al. by focusing primarily on the positional features in differentiating the adjunctive and disjunctive uses of the four synonymous adverbs being examined, although attention will be paid to meaning differentiation via scrutiny of tokens in cases where such scrutiny is necessary, i.e., when positional differentiation alone is inadequate.

Second, many of these grammar reference books also show that, while *actually* and *really* both mean "in reality" and both are often used to assert the truthfulness of what is being stated, they each have distinctive semantic functions in usage. For example, as a disjunct, *actually* not only means what is being said is true, but also implies that what is being stated is surprising to the addressee and sometimes even the speaker/writer him/herself. More importantly, *actually* is typically used in "a statement that contradicts, or expresses reservations about, a previous statement" (Greenbaum, 1969, p.141). In contrast, the disjunct *really*, when used to assert the truthfulness of the statement, does not convey this sense of surprise/contradiction/reservation. Furthermore, according to Greenbaum (1969) and Quirk, et al. (1985), *really* is far more versatile than not only *actually* but also all the other adverbs. For example, it may be used in interaction as a verbless question (*Really?*) to show "impatience and indignation" (Greenbaum, 1969, p.146), or as a one-word utterance for emphasis (*Really!*). Also, as an emphasizer, *really* "freely combines with all modals" (Hoye, 1997, p.161).

While these descriptions offer us some valuable information about the complex semantic functions of the two adverbs, they are inadequate in a few important ways. First, the reference books (except Biber, et al., 1999) do not include specific frequency information of the various uses of the adverbs. Instead, most of them (e.g., Carter & McCarthy, 2006; Quirk, et al., 1985) use rather vague frequency adverbs, e.g., "commonly" and "often" to describe the frequency of the different functions and sentence positions of the adverbs. As a result, they fail to provide information regarding which semantic function(s) are the most dominant with each adverb. The results of this corpus-based BP study will help fill in this information gap. Second, none of the reference books offers information concerning which

lexical categories (adjectives, adverbs, or verbs) the synonymous adverbs, as adjuncts, each typically modify and what specific types of adjectives/verbs they each tend to modify/intensify the most. Third, there is no usage information about *truly* and *genuinely* except for Quirk, et al.'s (1985) one line comment that *truly* is an adverb commonly used as a content disjunct describing modality and manner. While attempting to uncover all the missing information, the present study will also try to test many of the aforementioned existing descriptions of the adverbs.

METHODOLOGY

Corpus Used

The corpus used in this study is the 400+million-word Corpus of Contemporary American English (COCA). The corpus is composed of language data from 1990 to 2009, and it consists of equal amount data in five registers: spoken, fiction, magazines, newspapers, and academic writing. The corpus is also equipped with a powerful search engine with many user-friendly search functions. In other words, COCA is chosen for this study because of its contemporary and representative data as well as its capable and user-friendly search functions.

Corpus Query and Analysis Procedures

The Gries and associates' (2001, 2004, 2010) BP data annotation/analysis method is not used in this study because (i) the COCA does not allow free access to its entire data, (ii) the COCA data is so large that it would not be feasible to annotate the linguistic features of all the relevant tokens, and (iii) the main linguistic features of interest are, in fact, already tagged and/or accessible via the online search functions of the corpus. Thus, taking advantage of the versatile search functions of the COCA, this study uses a roughly three-phase query and analysis procedure: first, a query of the overall frequency of each of the four adverbs; second, a query of the frequency of each of the adverbs in various sentence positions and functions (e.g., sentence initially, medially, or finally as a disjunct and its function as a modifier of adjectives, adverbs, and adjectives); third, a query and examination of the semantic types of the nouns and verbs that each adverb typically modifies. To avoid repetition, the detailed query/analysis procedures and the rationale for them will be described in detail in due course in the following section.t

Furthermore, we manually perused some of the tokens in context,

a practice also known as "concordance contextual analysis" (Hardy & Colombini, 2011). This practice is necessary in BP studies because sometimes synonyms in the same context with the same distributions may have different meanings, as has been shown in studies by Liu (2010), and because sometimes the information needed is not accessible via a machine query. In this study, we performed manual perusals for both reasons. For the former reason, we perused 100 tokens each of *actually* and *really* in each of the three disjunctive positions in order to ascertain whether the existing descriptions regarding the meanings of the disjunctive uses of the adverbs were accurate. For the latter reason, we perused, with the help of four research assistants, over 40,000 tokens of the verbs *be*, *do*, and *have* modified by the four adverbs to ascertain whether each use of these verbs was used as an auxiliary or main verb so we could accurately determine the semantic functions of the verbs when modified by the adverbs. The extent of the context we perused varied from concordance lines (when they provided adequate contextual information) to passages with approximately 200 words, which was the largest amount of text for a given token that COCA offers and which proved always adequate for our query purposes.

Statistical Tests Adopted

To ascertain whether there are significant differences among the four verbs' distributional patterns in various categories, we employed a multifactorial test, called the hierarchical configural frequency analysis (HCFA), using Gries' (2004) HCFA 3.2 for R program. An HCFA is a much more informative test than the Chi-square test because, in addition to yielding the results that a Chi-square produces, it also shows which cell frequencies in the contingency table are significantly higher or significantly lower than expected. A cell frequency significantly higher than expected is considered a "type" whereas a cell significantly lower than expected is an "antitype." Because a meaningful explanation of how HCFA works without specific data and analysis results is difficult, such an explanation will be given in the next section when we discuss the results of the HCFA test on the differences among the four adverbs' overall frequency distribution in COCA.

RESULTS AND DISCUSSION

General Overall and Cross-Register Usage Patterns

To understand the general usage patterns of the four adverbs, we first

queried the COCA for the overall and cross-register frequency information for each of the adverbs in the set. The results (reported in Table 1) show the following overall frequency order (from lowest to highest): *genuinely*, *truly*, *actually*, and *really*. Furthermore, the results also reveal an enormous variation among the adverbs, with *really* being used overwhelmingly more often than the other adverbs and *genuinely* being used the least often with a frequency that is only a little more than one percent of that of *really*. In terms of their distributions across the registers, the adverbs also exhibit some noticeable and complex differences. To gain a meaningful understanding of these differences, an HCFA test was conducted. The detailed statistical results of the HCFA test are reported in Table 10 in the Appendix and the findings based on the results are included in Table 1. According to the test results, *really* seems to be the least formal adverb because it is the only type in the spoken register, i.e., it is the only adverb that has a frequency significantly higher than expected (hence arguably the least formal among the five registers due to the fact that the spoken register in COCA does not include formal speeches like commencement or conference speeches and the fact that spoken language in general is not as formal as written language) and the only antitype in academic writing (clearly the most formal register). *Genuinely* and *truly* are presumably the most formal in the set because they are both antitypes in speech (i.e., both have a frequency significantly lower than expected) and types (i.e., with a frequency significantly higher than expected) in academic writing. It is also important to note that *actually* is also a type in academic writing but it is neither a type nor an antitype in speech, so in terms of formality it lies in the middle between *really* on the one hand and *genuinely/truly* on the other.

Table 1: General overall and cross-register distributions of the adverbs with HCFA results*

	Spoken	Fiction	Magazine	Newspaper	Academic	Total
Actually	51,443	14,646 A	17,118 T	10,460 A	11,372 T	105,039
Genuinely	483 A	701 T	672 T	472 T	737 T	3,065
Really	135,802 T	45,147 T	36,904 A	34,531 T	10,703 A	263,087
Truly	3,573 A	4,125 T	5,259 T	3,475 T	4,072 T	20,504

* A cell number followed by a T denotes a Type (i.e., a frequency significantly higher than expected); a cell number followed by an A denotes an Antitype (a frequency significantly lower than expected). A cell followed by no letter is neither.

Sentence Position Distribution Patterns

To gain a more in-depth understanding of the usage patterns of the adverbs, we next investigated the frequency information regarding the positions these adverbs typically occupy in a sentence. The search for this information is motivated by the highly mobile nature of adverbs and the functional variations that accompany this mobility, as discussed earlier. Understanding the positional distributions of the four adverbs should help us better determine their semantic functions and their overall usage patterns. Specifically, we searched the corpus for each of the adverbs in the following positions: (i) sentence initial position followed by a comma (sentence initial disjunct), (ii) isolated by two commas (sentence medial disjuncts), (iii) sentence final preceded by a comma (sentence final disjunct), (iv) sentence initial followed by a question mark (one word question), (v) sentence initial followed by a period (one word sentence), (vi) after the negation word *not*, and (vii) other (adjunct modifying a verb, an adjective, or an adverb).[4] The positional distribution results together with the findings of an HCFA test are reported in Table 2 (with the HCFA statistical results being in Table 11 in the Appendix).

The results show that there are significant differences in the distributions of the four adverbs among the queried sentence positions. *Actually* was the only type in all the disjunct positions (sentence initial, medial, and final), and it was also an antitype in all the other three positions, although it does show a high frequency in the "other" category. The reason that *actually* is found to be an antitype in the "other" category (i.e., as an intensifier/emphasizer adjunct) despite its high absolute count is that its frequency in the category is not as high as would be expected in consideration of its frequency across all the positions and in comparison with the distributions of the other adverbs. In short, the results show a strong tendency for *actually* to be used as a disjunct. In contrast, *really* was an antitype in all the three disjunct positions but a clear type in the remaining three categories. It is also necessary to note that, despite its high absolute number of tokens in the medial and final disjunct positions, *really* was found to be an antitype in these two categories, due largely to its extremely high frequency in the "other" category. This result suggests that the dominant function of *really* is an intensifier/emphasizer adjunct, rather than a disjunct. The distributional patterns of *genuinely* and *truly* are fairly similar and they appear to differ from those of either *actually* or *really*. However, a close look will show that they behave less differently from *really* than from *actually*. First, like *really*, they are each a type in the "other"

Table 2: Distributions of the positions of the adverbs with HCFA results

	Initial Disjunct	Medial Disjunct	Final Disjunct	One-Word Question	One-Word Sentence	Other	Total
Actually	3,212 T	3,754 T	1,983 T	0 A	13 A	96,077 A	105,039
Genuinely	1 A	6 A	2 A	0	1	3,055 T	3,065
Really	693 A	4,499 A	2,713 A	139 T	425 T	254,618 T	263,087
Truly	184	124 A	34 A	1 A	34	20,127 T	20,504

category. Second, also like *really*, they are each an antitype in the three disjunct positions with the only exception of *truly* being neither a type nor an antitype in the sentence initial disjunct position.

Finally, it is important to note that the "other" use (adjunct modifying adjectives, adverbs, and verbs) accounts for an overwhelming majority of the functions of all of the four adverbs. This finding should not be surprising, though, because modifying adjectives, adverbs, and verbs is the main function of all adverbs. Also, it should not overshadow the importance of the other functions of the adverbs, especially for *actually* and *really*. This is because, though not as frequent as the "other" use, some of these less frequent functions actually have a substantial frequency, e.g., the sentence-initial and medial disjunct tokens of *actually* amount to 6,966 and the sentence medial and final disjunct tokens of *really* amount to 7,212. More importantly, these unique disjunct functions of the adverbs are what sets them apart from most of the other adverbs and it is the differences in these unique disjunct functions that help distinguish the four synonymous adverbs from one another.

The findings about the positional distributional patterns of the synonymous adverbs also reveal some inadequacies in the existing descriptions of the functions of the adverbs. For example, most grammar books discuss at great length the use of *really* as a disjunct and its various semantic functions, but none notes that, compared with its use as an adjunct (i.e., an intensifier/emphasizer), its frequency as a disjunct is low. *Really* is used primarily as an adjunct rather than a disjunct, especially in comparison with *actually* in proportion. One more finding here that contradicts existing descriptions relates to Quirk, et al.'s (1985, p.628) statement that *truly* is often used as a disjunct in one-word "verbless questions." Yet, there is only one token of such use in our data, suggesting such use is actually very rare.

Also, as mentioned earlier, we perused some tokens in context to determine whether existing descriptions regarding the meanings of the disjunctive uses of the adverbs are accurate. The results of our perusal of 100 tokens of *actually* and *really* in each of the three disjunctive positions generally support existing descriptions. For example, *actually* often indeed implies a contrast/surprise, whether it is in sentence initial or medial position, as can be seen in the following COCA examples:

14. "She said she didn't know why she put up with him. *Actually*, she did, for to her, even in his stubbornness, he was still the sexiest man she'd ever seen."
15. "Oh, I was not Michael's official doctor. I was his best friend, *actually*, at one stage of his life."

16. "It's unprecedented," she said. "It's absolutely unprecedented. No pilot has ever ..." "*Actually*," said Robert, "it's not unprecedented. There is one case."

It is clear from the examples that *actually* can be used within a monologue (examples 14 and 15) or in a dialogue (Example 16). Another important point worth mentioning is that, in the sentence-initial disjunctive use, *actually* sometimes functions simultaneously as a conjunct (i.e., a linking adverb) to provide a contrastive link between two sentences as shown in Example 14. The fact that *actually* sometimes functions simultaneously as a conjunct and a disjunct lends support to Hasselgård's (2010, p.302) finding that there are some uses of adverbs that "express meanings belonging to more than one metafunction at the same time, or that may be interpreted as a member of one or the other class [function type] depending on the context," making it sometimes difficult to apply in the semantic classification of adverb uses the traditional divisions between adjuncts, disjuncts, and conjuncts.

In contrast with *actually*, *really* as a disjunct is used to assert the truthfulness of a statement and for emphasis only, i.e., no implication of contrast/surprise as can be seen in the following COCA example:

17. "Don't tell me about your last date. *Really*, I don't want to hear about it."

In fact, the *really* in the one-word sentence structure functions similarly (also from COCA):

18. Thanks for sticking with it. *Really*. You've been the model for America.

Of course, when *really* occurs as a question, it is not used for assertion but as a marker challenging the previous statement as shown in the following COCA example:

19. Hewlett-Packard presents itself as a concerned and caring company with the customer's interests at heart. *Really?* Why, then, does HP refuse to make available print drivers ...?

Distributions of the Adverbs as Modifiers of Adjectives, Adverbs, and Verbs

Besides functioning as disjuncts, the four adverbs are also used as adjuncts modifying adjectives, verbs, and adverbs. We next queried the corpus regarding the distributions of the adverbs in this function. Specifically, we queried the frequencies of the adjectives, adverbs, and verbs immediately

following each of the adverbs. The results of the query, along with the findings from an HCFA test shown in Table 3 (with the HCFA statistic results reported in Table 12 in the Appendix), reveal a distribution pattern similar to that of the positional distribution pattern reported in Table 2 above: *actually* behaves very differently from the other three adverbs while the behaviors of *genuinely* and *truly* are essentially identical and much closer to that of *really* than *actually*. Specifically, *actually* is a type only in modifying verbs and an antitype in the other two categories. It is particularly worth noticing that it is the only antitype in the adjective modifying category, and more importantly, its frequency as an adjective modifier is less than half that of *truly*, an adverb whose total frequency is only 20% of that of *actually*. This result suggests that, proportionally, *actually* is seldom used as an adjective modifier while *truly* and *genuinely* are used primarily and *really* is used extensively in this function. This new finding adds to our understanding of both the adverb *actually* and the synonym set as a whole, for, so far, grammar references often list *actually* as an intensifier together with *really* but they do not explain that *actually* is an intensifier mostly for verbs and rarely for adjectives.

Table 3: Distributions of the adverbs as adjective, adverb, and verb modifiers with HCFA results

	Adjective	Adverb	Verb	Total
Actually	3,462 A	3,832 A	65,922 T	73,216
Genuinely	1,621 T	15 A	1,174 A	2,810
Really	44,527 T	12,021 T	147,476 A	204,024
Truly	7,979 T	282 A	8,166 A	16,427

The Types of Adjectives and Verbs that the Adverbs Each Typically Modify

The general frequencies of the adverbs as modifiers of adjectives, adverbs, and verbs shown above provide us some useful information about the functional differences among the adverbs. However, to gain a more in-depth understanding of the differences among the adverbs in this function, it will be necessary to examine the semantic types of the adjectives, verbs, and adverbs they each typically modify. As mentioned earlier, corpus-based BP research has shown that the study of the semantic type(s) of a lexical item's collocates is a very effective way to determine its semantic and functional patterns. Thus, we queried COCA to identify which adjectives

and verbs the four adverbs each modify the most. The reasons we did not include adverbs in this query were two: (i) as shown in Table 3, the number of adverbs that the four synonyms modify is very small compared with those of the adjectives and verbs they modify, and in the case of *genuinely* and *truly*, the total numbers of their adverb tokens (15 and 282, respectively) are too small for any meaningful analysis; (ii) the semantic types of the adverbs modified by the four synonyms are very limited and similar (being primarily degree and frequency adverbs like *quite* and *very*), making any comparative analysis not very meaningful.

The search of the adjectives and verbs modified by the synonymous adverbs was done in two steps. First, we searched by raw frequency, which enabled us to identify the verbs/adjectives each adverb modified most often in terms of frequency. Second, we repeated the search by using the "relevance" sorting function of the COCA. This provided the mutual information (MI) score. The MI test, developed by Church & Hanks (1990), measures the probability of content words collocating. The frequency measure and the MI score complement each other in better determining the lexical items the adverbs typically modify. While the frequency measure favors words that have a high overall frequency in the corpus, the MI score privileges words that have a low overall frequency but occur habitually with the particular search term (Church & Hanks, 1990). Despite the difference, the results of our two types of queries (reported in Tables 8 and 9 in the Appendix) show some overlap between the two measures, especially in the verb category. For example, three of the top ten verbs under *genuinely* by frequency also appeared in its top ten verbs by the MI score (a 30% overlap). Furthermore, there is also some overlap among the different adverbs' top items. For instance, the adjective *good* appears in the top adjective lists of three of the adverbs (*actually*, *genuinely*, and *really*). In the case of the verbs, two verbs (*be* and *do*) make the top lists of all of the four adverbs, and five verbs made the top lists of three of the adverbs. Because of the overlaps, the actual total number of the adjectives modified most frequently by the four adverbs is not 80 (the would-be number if there were no overlap at all for the adverbs) but 69, and the actual total number of the verbs is only 49 or 52 after the auxiliary uses of *be*, *do*, and *have* were identified and counted separately from their main verb uses.

We then classified the most frequently modified adjectives and verbs into broad semantic categories and tabulated the types under each adverb (see Table 4 for the adjective results and Table 5 for verb results). The main

reason for using a broad, rather than a finer-grained, semantic categorization is that the latter would result in too many categories, some of which would have too few tokens for a meaningful statistical analysis. It is necessary to note that the auxiliary use of the verbs *be*, *do*, and *have* under each adverb is listed in parenthesis in Table 5 because they were not queried as separate verbs during the corpus search. The tokens of such auxiliary uses were, however, included in the auxiliary category count for statistical analysis.

Table 4: Types of adjectives modified most frequently by each adverb

***Actually* (20 different adjectives)**	***Genuinely* (18 different adjectives)**	***Really* (19 different adjectives)**	***Truly* (19 different adjectives)**
17 evaluation	7 emotion/attitude	19 evaluation	17 evaluation
2 possibility/ability	6 mental state		2 emotion/attitude
1 emotion/attitude	5 evaluation		

Table 5: Types of verbs modified most frequently by each adverb

***Actually* (19 different verbs)**	***Genuinely* (17 different verbs)**	***Really* (19 different verbs)**	***Truly* (18 different verbs)**
11 activity	16 emotion/desire	11 emotion/desire	11 emotion/desire
6 state/change of state	2 activity/ accomplishment	3 cognition	5 cognition
3 obtaining/ possession (3 primary auxiliaries)	1 cognition	2 activity	2 activity
	1 state/change of state (2 primary auxiliaries)	2 obtaining/ possession	1 state/change of state
		1 state	1 obtaining/ possession (3 primary auxiliaries)
		1 auxiliary (*ought*) (3 primary auxiliaries)	

Though these categorization results offer us the general semantic patterns of the adjectives and verbs with which each of the adverbs occurs, they do not explain the entire picture. For example, *really* has only evaluation adjectives occurring in its top list. While this points to its typical use with evaluation adjectives, it does not mean that *really* cannot modify adjectives in other semantic categories such as emotion/attitude. To determine each adverb's use in all of the semantic categories, we queried the COCA for the four adverbs' frequency with each of the 69 adjectives and each of the

49 verbs and tabulated the frequency of each adverb for the semantic types of adjectives (Table 6) and verbs (Table 7, placed further below where the discussion of the verb results is given). An HCFA test was done on the query results of the adjectives and the verbs and the statistical results of the HCFA tests are reported in Tables 13 and 14, respectively, in the Appendix. We will first discuss the adjective results.

Table 6: Types of adjectives modified most frequently by the adverbs with HCFA results

	Emotion/ Attitude	Evaluation	Mental State	Possibility/ Ability	Total
Actually	41 A	623 A	77 T	127 T	868
Genuinely	164 T	207 A	216 T	0 A	587
Really	1,265 A	16,108 T	863 A	95 A	18, 331
Truly	228 T	1,413	87	15	1,743

The HCFA results of the frequency distributions of the adjective types modified by the adverbs (Table 6) show significant differences. First, it is important to note that these results demonstrate again that *actually* is not used often with adjectives, for its frequency with the most frequently modified adjectives is extremely low both in proportion and in token counts. In fact, its frequency here is less than half that of *truly* and slightly more than that of *genuinely*, two adverbs whose total frequencies are far smaller than (only 1/5 and 1/30, respectively) that of *actually*. The results also show that the behavioral pattern of *actually* with adjectives is quite different from those of the other three adverbs. *Actually* is an antitype in the emotion/attitude and evaluation categories but a type in the mental state and possibility/ability categories, two categories where the other three behave very differently. Specifically, in the latter two categories, *really* is an antitype in both, *truly* is neither a type nor antitype, and *genuinely* is an antitype in one (possibility) and a type in the other (mental state). Another point worth mentioning is the use of *actually* in modifying evaluative adjectives, a category for which *actually* has a substantial token number but for which it is an antitype due largely to the extremely high number of *really* and *truly* in the category. It is also of interest to note that, of the 17 evaluative adjectives *actually* modifies, eight are comparative (e.g., *better* and *brighter*; see Table 8 in the Appendix). None of the adjectives on the other adverbs' top lists is comparative. The extensive use of *actually* with comparative adjectives is clearly tied to its semantic

function of implying contradiction/surprise discussed earlier. The following COCA example illustrates this point:

20. Fuel, factoring in inflation, is *actually* cheaper than it was in 1967 ... Most people would indeed be surprised to hear that fuel today is cheaper than in 1967.

In contrast with *actually*, *really* is a type with evaluation adjectives. In fact, this is the only category in which it is a type, and it is an antitype for all the remaining three categories of adjectives. This should not be a surprise, though, because if we recall, all of its most frequently modified adjectives (see Table 4) are evaluation adjectives (e.g., *good* and *important*). This means that *really* is used primarily as an intensifier or degree modifier of the adjectives it modifies. Concerning *genuinely*, it is a type for both the emotion/attitude adjectives (e.g., *happy* and *sorry*) and the mental state adjectives (e.g., *interested* and *puzzled*), suggesting that the use of *genuinely* highlights authenticity of personal feelings and mental states. The behavioral pattern of *truly* is fairly similar to *genuinely*. Like *genuinely,* it is a type in the emotion/attitude category. Also, although it is not a type in the mental state category, *truly* is not an antitype either. Thus, as adjective modifiers, *genuinely* and *truly* form a close pair. It is also important to note that with a frequency of 1,413, *truly* registers substantial use in the evaluative adjective category, although it is not a type (but also not an antitype either) due to the extremely high frequency of *really* in this category. In fact, the frequency of *truly* in modifying evaluation adjectives accounts for 81% of its 1,743 total uses as an adjective modifier. In other words, *truly*, like *really*, is also used very often as an intensifier. Overall, the results here indicate that, as adjective modifiers, *genuinely* and *truly* behave in a way quite similar to *really* and very differently from *actually*.

Now let us turn to the analysis of the types of verbs the synonymous adverbs typically modify. Both the results of the classification of the types of the verbs modified by each adverb (see Table 5) and the frequencies of the adverbs with the different types of verbs (see Table 7 with the HCFA findings) show significant differences among the four adverbs in their distributional patterns.

Again, *actually* behaves very differently from the other three adverbs. It is the only type in both the activity/accomplishment and obtaining/possession verb categories where all the other three adverbs are each an antitype. Furthermore, *actually* is the only antitype in the cognition and emotion/desire verb categories where all the other three adverbs are each a type. Once again, *genuinely* and *truly* behave in a very similar pattern.

Table 7: Types of verbs modified most frequently by the adverbs with HCFA results

	Activity/ Accomplishment	Auxiliary	Cognition	Emotion/ Desire	Linking/State	Obtaining/ Possession	Total
Actually	8,627 T	4,292 A	1,696 A	2,008 A	4,271	5,222 T	26,116
Genuinely	40 A	42 A	123 T	368 T	32 A	19 A	624
Really	11,589 A	20,875 T	11,918 T	23,196 T	15,363 A	8,793 A	91,734
Truly	327 A	441 A	1,052 T	1,137 T	1,213 T	291 A	4,461

First, both adverbs are rarely used in modifying verbs, and when they do, they modify mostly cognition and emotion/desire verbs. As usual, their behavioral patterns are also closer to that of *really* than *actually*, for *really* is also a type in cognition and emotion/desire verbs and an antitype in the activity and obtaining/possession verbs. However, *really* is also unique in the sense that it is the only type in the auxiliary category. This means that, in the adverb set, *really* is noted for its use as an emphasis for auxiliary verbs, as can be seen in the following COCA examples:

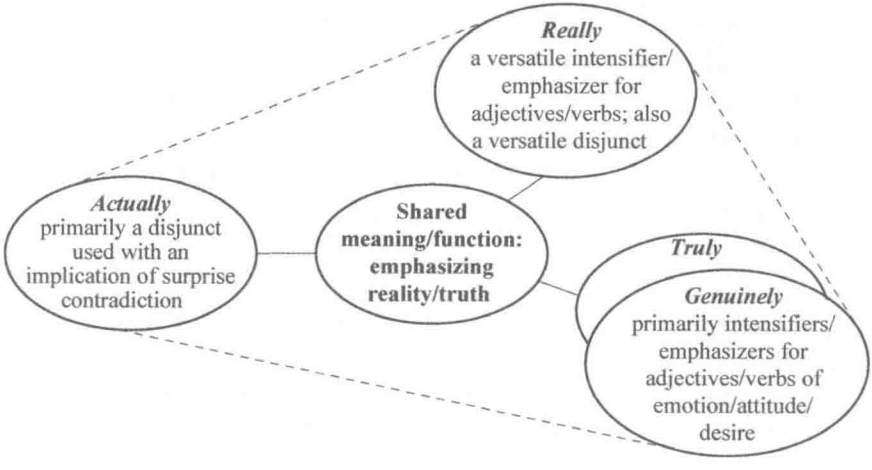
21. I think Washington's a company town. I *really* do.
22. This blindsided me, it *really* did.

KEY FINDINGS: A CONCLUSION

Findings Regarding the Four Synonymous Adverbs

The above data analyses have elucidated many of the fine-grained semantic and usage differences among the four examined adverbs. The findings, in turn, offer a clear delineation of the internal semantic structure of the synonym set that may be summarized in the following scalene, triangle-like diagram (Figure 1) where the main distinctive semantic functions of the adverbs and their relations with one another are spelled out. As illustrated in the figure, emphasizing reality/truth is what all four adverbs do and is, hence, the central force which pulls the adverbs together and makes them synonymous. The adverbs, however, also differ from one

Figure 1: The internal semantic structure of the four synonymous adverbs



another in varying degrees in their semantic functions, as has been already explained in the data analysis. *Actually*, with a usage pattern noticeably different from the other three adverbs, is situated, therefore, farthest away from the other three at the far left by itself. *Really*, being the most versatile with by far the highest overall frequency, sits at the highest point, and, due to its many semantic/functional similarities with *genuinely* and *truly*, it is located much closer to the latter than to *actually*. However, *really* is not situated as far away from *actually* as *genuinely* and *truly* are because, like *actually*, it also often functions as a disjunct, although its disjunctive meaning differs from that of *actually*. As for *genuinely* and *truly*, due to the many overlaps they have in their meaning and function and their overall low frequency, they basically cohabit at the far lower right with *genuinely* situated at the lowest point due to its having the lowest frequency in the set.

The important fine-grained semantic/usage differences uncovered in this study also highlight some noticeable deficiencies in the existing reference books' descriptions of the synonymous adverbs. For example, many dictionaries including the *OED online* (2010) define the synonymous adverbs in a circular manner, e.g., defining *actually* in terms of *really* and *truly* and defining the latter using the former two with a little additional elaboration. Yet, as the results have shown, *actually* differs significantly from *really* and *truly* both in meaning and function. Also, the existing reference books often present *actually* as an intensifier together with *really* but they fail to note that *actually* is used predominantly as a disjunct in this function and, unlike *really*, is rarely used as an adjective intensifier/emphasizer. Also, when *actually* is used as an intensifier/emphasizer of adjectives and verbs, it seldom occurs with adjectives and verbs of emotion/attitude/desire/cognition. Similarly, no reference books we are aware of point out that *really*, as an adjective intensifier/emphasizer, is used most frequently with evaluative adjectives. Also, no reference books note that *genuinely* and *truly*, while often functioning as adjective intensifiers/emphasizers, are seldom used with verbs in this function, and when they are used as adjective and verb intensifiers/emphasizers, they are used mostly with adjectives and verbs of emotion/attitude/desire/cognition.

Findings Regarding the Use of Corpus-Based BP in the Study of Adverbs

The informative results of this study regarding the four synonymous adverbs have clearly demonstrated that corpus-based BP analysis is a viable and

effective approach in the study of (synonymous) adverbs, as it is has been in the study of adjectives and verbs. However, due to the unique nature of adverbs, the key usage features for the analysis and understanding of these lexical items are not all the same as those for the analysis and understanding of adjectives and verbs. For example, in the study of adjectives and verbs, their immediate collocates (i.e., for adjectives, the typical types of nouns they modify, and for verbs, the typical nouns that they take as complements) arguably constitute the single most important piece of information for understanding their meaning and usage (Divjak & Gries, 2006; Geeraerts, 1986; Gries & Otani, 2010; Hanks, 1996; Liu, 2010). While such collocation information is also important for the study of adverbs, positional distribution patterns constitute a crucial key for capturing adverbial meaning. Also, because adverbs may modify a larger variety of lexical items (e.g., adjectives, adverbs, and verbs), more different types of collocates must be examined. In short, more linguistic distributional patterns must be examined in the study of (synonymous) adverbs than in the study of adjectives and verbs. Based on the results of this study, the following appear to be the key features that help form the most basic template for the study of adverbs: (i) their positional distribution, (ii) their general distribution as modifiers of adjectives, adverbs, and verbs respectively, and (iii) the semantic types of the adjectives and verbs the adverbs typically modify. Finally, as also indicated in previous BP studies, manual concordance contextual analysis is still necessary with some data, e.g., the need to read representative tokens to determine whether two adverbs in the same context (e.g., in the same sentence position) may have the same meaning, and also the need to "manually" check the concordance lines of *be*, *do*, and *have* used with the adverbs to differentiate their uses as main and auxiliary verbs.

In short, this corpus-based BP study has shown the importance and usefulness of employing the BP approach in the examination of synonymous adverbs: it is indeed a viable method in determining the "company they keep" — the company that Firth (1957) noted was the key to understanding the true meaning of a word.

Notes

1. Here, we use "near-synonymous" instead of "synonymous" for describing these four adverbs because true synonyms are extremely rare unless cross-dialect synonyms are considered (Edmonds & Hirst, 2002; Liu, 2010; Stubbs, 2001; Taylor, 2002). In other words, all synonyms are really near-synonyms. For the sake

of simplicity, however, we will use the term "synonym" in the rest of the paper.

2. Whereas there are no prescribed procedures for BP-based examination of synonymy, there are general guidelines for corpus data analysis as specified by Sinclair (2003).
3. Greenbaum (1969) and Quirk, et al. (1985) also employ some other specific criteria to distinguish among the different adverb types, such as whether the adverb can be the focus of a question. For lack of space, we will not discuss the criteria; we refer the reader to Quirk.
4. The reason that we have included, in the "other" category, only the uses of the adverbs as adjuncts modifying adjectives, adverbs, and verbs is that, besides such uses, we have not identified any other types of use of the adverbs in this category. Yet, it does not mean that future research may not identify additional types of use.

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APPENDIX

Table 8: Adjectives modified most frequently by each of the four adverbs

Actually		*Genuinely*		*Really*		*Truly*	
By Frequency	**By MI Score**	**By Frequency**	**By MI Score**	**By Frequency**	**By MI Score**	**By Frequency**	**By MI Score**
able 91	counter-productive 10.04	Interested 90	contrite 13.76	good 4,273	fucked-up 9.58	great 188	needy 11.09
good 86	detrimental 9.84	concerned 71	perplexed 12.63	important 1,557	uncalled for 9.45	remarkable 129	mind-boggling 10.57
better 84	harmful 9.61	surprised 62	baffled 12.20	hard 1,435	neat 9.29	global 120	adventurous 10.38
true 69	healthier 9.54	new 42	puzzled 11.94	bad 1,310	shitty 9.26	amazing 119	wondrous 10.20
present 47	beneficial 9.48	happy 35	informative 11.37	nice 1,125	scary 9.17	sorry 112	remarkable 10.10
involved 45	brighter 9.37	nice 32	ecumenical 11.17	big 1,076	crappy 9.14	free 98	disadvantaged 9.94
worse 45	cheaper 9.32	puzzled 26	saddened 10.76	great 1,070	cute 9.12	important 83	pluralistic 9.79
lower 42	taller 9.14	good 25	fond 11.02	interesting 853	weird 9.09	effective 80	frightening 9.78
available 36	jealous 8.9	sorry 25	interested 10.55	tough 514	nice 8.85	happy 76	inspirational 9.78
higher 35	misleading 8.73	curious 23	outraged 10.34	cool 507	exciting 8.71	unique 74	revolutionary 9.60

Table 9: Verbs modified most frequently by each of the four adverbs

Actually		*Genuinely*		*Really*		*Truly*	
By Frequency	**By MI Score**	**By Frequency**	**By MI Score**	**By Frequency**	**By MI Score**	**By Frequency**	**By MI Score**
be 5,500	predate 6.49	believe 95	excite 10.77	be 17,462	excite 7.75	be 1,193	astound 9.99
have 3,836	worsen 6.21	want 64	impress 10.56	do 14,895	appreciate 7.45	believe 611	terrify 7.84
do 3,090	transpire 6.2	like 43	thrill 10.24	want 8,107	enjoy 6.73	do 343	appreciate 7.81
go 1,908	outperform 5.91	be 40	distress 10.10	have 7,978	want 6.41	have 235	comprehend 7.57
get 1,686	happen 5.79	care 42	frighten 9.91	think 4,334	bother 6.17	love 230	believe 7.35
see 1,424	exist 5.66	love 41	commit 7.90	know 4,164	ought 6.13	understand 225	deserve 6.71
make 1,300	impede 5.49	do 26	enjoy 7.65	need 3,781	hurt 6.08	want 178	regret 6.59
happen 830	exacerbate 5.48	enjoy 26	believe 7.50	get 3,456	piss 6.03	feel 153	enjoy 6.57
take 774	increase 5.43	move 26	appreciate 7.35	go 3,150	upset 5.96	know 124	understand 6.50
say 756	sabotage 5.41	feel 23	care 6.69	like 2,897	believe 5.95	make 97	inspire 6.42

Table 10: HCFA test results of the overall distributions of the adverbs across the registers

Adverb	Register	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
really	spoken	135,802	128,489.7846	416.1303	>	1.30437775497178e-134	***	0.028
really	academic	10,703	18,056.9854	2,995.0238	<	0	***	0.02

(continued)

Adverb	Register	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
truly	spoken	3,573	10,014.005	4,142.8525	<	0	***	0.017
actually	academic	11,372	7,209.3554	2,403.4895	>	0	***	0.011
really	magazine	36,904	40,268.2059	281.0625	<	3.93758272207977e-71	***	0.01
truly	academic	4,072	1,407.2928	5,045.6198	>	0	***	0.007
actually	fiction	14,646	17,328.5723	415.2791	<	9.30788464795549e-101	***	0.007
actually	newspaper	10,460	13,123.4726	540.5647	<	1.13252933136609e-131	***	0.007
really	fiction	45,147	43,402.185	70.1435	>	3.1791654234934e-18	***	0.005
truly	magazine	5,259	3,138.3508	1,432.967	>	5.36894075460415e-262	***	0.005
really	newspaper	34,531	32,869.839	83.951	>	7.40318242387073e-21	***	0.005
actually	magazine	17,118	16,077.3131	67.3638	>	2.18350882881904e-16	***	0.003
genuinely	spoken	483	1,496.9238	686.7694	<	9.23718540823634e-205	***	0.003
truly	fiction	4,125	3,382.6012	162.9385	>	1.21349067513895e-34	***	0.002
truly	newspaper	3,475	2,561.7502	325.5685	>	2.31061509645306e-65	***	0.002
genuinely	academic	737	210.3664	1,318.3804	>	5.36110531077206e-174	***	0.001
genuinely	magazine	672	469.1302	87.7286	>	3.98795083361906e-18	***	0.001
genuinely	fiction	701	505.6415	75.4783	>	3.72932175888902e-16	***	0
genuinely	newspaper	472	382.9382	20.7135	>	1.20513745693475e-05	***	0
actually	spoken	51,443	51,300.2865	0.397	>	0.250200717168423	ns	0

Table 11: HCFA test results of the positional distributions of the adverbs

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
actually	other	96,077	100,254.7999	174.0965	<	2.36030267807693e-52	***	0.014
really	other	254,618	251,124.7672	48.5921	>	1.59898286221804e-30	***	0.014
actually	inidisjunct	3,212	1,096.73	4,079.7345	>	0	***	0.005
really	inidisjunct	693	2,747.161	1,535.9775	<	0	***	0.005
actually	medidisjunct	3,745	2,245.481	1,001.37	>	4.04827361523862e-183	***	0.004
really	medidisjunct	4,499	5,624.6274	225.266	<	2.89417651456667e-54	***	0.003
actually	finadisjunct	1,983	1,268.6136	402.2879	>	9.94727502018159e-76	***	0.002
really	finadisjunct	2,712	3,177.7062	68.2512	<	1.26331644324637e-16	***	0.001
truly	finadisjunct	34	247.6593	184.327	<	4.79802674496073e-64	***	0.001
truly	medidisjunct	124	438.3637	225.4396	<	2.63431918385204e-69	***	0.001
truly	other	20,127	19,571.7835	15.7505	>	0.000178376478658154	***	0.001
genuinely	finadisjunct	2	37.0209	33.1289	<	6.63851922338037e-13	***	0
genuinely	inidisjunct	1	32.0049	30.0361	<	4.15414752240336e-12	***	0
truly	inidisjunct	184	214.1041	4.2328	<	0.0784898289517654	ns	0
genuinely	medidisjunct	6	65.5279	54.0773	<	5.86086477358775e-20	***	0
actually	onewquest	0	37.5409	37.5409	<	5.95117043964162e-16	***	0
genuinely	onewquest	0	1.0955	1.0955	<	0.334364113258653	ns	0

(continued)

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
really	onewquest	139	94.0348	21.5013	>	6.91019875679597e-05	***	0
truly	onewquest	1	7.3287	5.4651	<	0.0328000249717493	*	0
actually	onewsent	13	126.8345	102.1669	<	5.10184454586695e-37	***	0
genuinely	onewsent	1	3.7013	1.9715	<	0.232160477327196	ns	0
really	onewsent	425	317.7035	36.2367	>	5.16826893069667e-08	***	0
truly	onewsent	34	24.7607	3.4476	>	0.134352340741348	ns	0
genuinely	other	3,055	2,925.6495	5.7189	>	0.0436295941085866	*	0

Table 12: HCFA test results of the distributions of the adverbs as adjective, adverb, and verb modifiers

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
actually	verb	65,922	55,005.904	2,166.3339	>	0	***	0.045
actually	adjective	3,462	14,221.7987	8,140.5503	<	0	***	0.038
really	verb	147,476	153,279.6733	219.7462	<	1.43971573225767e-100	***	0.038
really	adjective	44,527	39,630.5215	604.9757	>	2.41694552542124e-148	***	0.019
truly	adjective	7,979	3,190.8529	7,185.0234	>	0	***	0.016
truly	verb	8,166	12,341.3186	1,412.595	<	0	***	0.015
genuinely	adjective	1,621	545.8268	2,117.8832	>	7.54641155282285e-302	***	0.004
really	adverb	12,021	11,113.8051	74.0523	>	4.83592715209727e-18	***	0.003

(continued)

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
genuinely	verb	1,174	2,111.104	415.9738	<	4.72115985043415e-110	***	0.003
truly	adverb	282	894.8284	419.6991	<	2.06219091199597e-126	***	0.002
actually	adverb	3,832	3,988.2972	6.1251	<	0.00625613237347733	**	0.001
genuinely	adverb	15	153.0692	124.5391	<	4.86746488901416e-46	***	0

Table 13: HCFA test results of the distributions of the types of adjectives modified most frequently by the adverbs

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
really	evaluation	16,108	15,625.0723	14.926	>	5.78738937618313e-13	***	0.031
genuinely	evaluation	207	500.3501	171.9881	<	7.52789477486001e-50	***	0.014
really	menstate	863	1,058.36	36.061	<	1.08942395868882e-09	***	0.01
really	emoattit	1,265	1,445.7726	22.603	<	2.23641318158491e-06	***	0.009
genuinely	menstate	216	33.8911	978.5357	>	5.27452110126459e-96	***	0.008
actually	evaluation	623	739.8703	18.4609	<	2.79246340041948e-05	***	0.006
genuinely	emoattit	164	46.2969	299.2429	>	4.40772052405888e-40	***	0.005
actually	possiabi	127	9.5553	1,443.519	>	8.58363567878676e-93	***	0.005
really	possiabi	95	201.7951	56.5187	<	3.54082970588988e-16	***	0.005
truly	emoattit	228	137.471	59.6162	>	8.94394544446908e-12	***	0.004
truly	evaluation	1,413	1,485.7073	3.5581	<	0.076319919508127	ns	0.004

(continued)

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
actually	emoattit	41	68.4595	11.0142	<	0.00139232059474564	**	0.001
actually	menstate	77	50.1149	14.423	>	0.00124155684935093	**	0.001
truly	menstate	87	100.634	1.8471	<	0.185005293102963	ns	0.001
genuinely	possiabi	0	6.4619	6.4619	<	0.00624102608718448	**	0
truly	possiabi	15	19.1877	0.914	<	0.202712215576136	ns	0

Table 14: HCFA test results of the distributions of the types of verbs modified most frequently by the adverbs

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
actually	activity	8,627	4,293.0954	4,375.1017	>	0	***	0.037
really	activity	11,589	15,434.3477	958.0385	<	8.27706295031564e-259	***	0.036
actually	emodesire	2,008	5,570.8247	2,278.6069	<	0	***	0.031
really	emodesire	23,196	20,027.9839	501.1151	>	3.23809801797436e-126	***	0.031
actually	possession	5,222	2,987.8342	1,670.607	>	2.21696755605768e-306	***	0.019
really	possession	8,793	10,741.7301	353.5323	<	2.2506516817318e-90	***	0.017
really	auxiliary	20,875	19,233.8832	140.0271	>	1.86726798305662e-36	***	0.016
actually	cognition	1,096	2,959.4681	1,173.3573	<	0	***	0.016
really	cognition	11,918	10,639.7493	153.568	>	1.72824351891454e-36	***	0.011
actually	auxiliary	4,292	5,349.944	209.207	<	5.7803758954734e-52	***	0.009

(continued)

Adverb	Position	Freq	Exp	Cont.chisq	Obs-exp	P.adj.Holm	Dec	Q
truly	auxiliary	441	935.3386	261.2644	<	4.29459348768171e-72	***	0.004
truly	cognition	1,052	517.4082	552.3461	>	1.23182765921855e-93	***	0.004
truly	linkstate	1,213	761.362	267.9105	>	9.7981347989097e-51	***	0.004
truly	activity	327	750.5682	239.0323	<	3.08178630227927e-67	***	0.003
really	linkstate	15,363	15,656.3059	5.4948	<	0.0120185019905678	*	0.003
genuinely	emodesire	368	136.2359	394.2764	>	2.56768122751059e-59	***	0.002
truly	possession	291	522.3675	102.4775	<	1.08429615601992e-27	***	0.002
genuinely	activity	40	104.9887	40.2284	<	1.71333642867259e-12	***	0.001
genuinely	auxiliary	42	130.8342	60.3169	<	9.7488964032635e-19	***	0.001
truly	emodesire	1,137	973.9555	27.2944	>	5.11365643527287e-07	***	0.001
actually	linkstate	4,271	4,354.8336	1.6139	<	0.0989637926461843	ns	0.001
genuinely	linkstate	32	106.4985	52.1137	<	1.55266590955756e-16	***	0.001
genuinely	cognition	123	72.3745	35.4122	>	1.52914027202030e-07	***	0
genuinely	possession	19	73.0682	40.0088	<	3.11640834436792e-13	***	0

Chapter 12

Research and Understanding Synonymous Nouns: A Corpus and Cognitive Analysis of Two Sets of Synonymous Nouns

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INTRODUCTION

Background

Synonymy or near-synonymy is a very common and intriguing linguistic phenomenon.[1] While synonyms express basically the same concept, they often do so in different fashions, for different contexts, and/or from different perspectives. As such, synonyms are challenging but also very important linguistic items because they are vital for precise and effective communication (Edmonds & Hirst, 2002; Hatch & Brown, 1995). Understanding synonymy is also important for us because its very existence "inherently affects the structure of lexical knowledge" (Edmonds & Hirst, 2002, p.106). Yet historically the issue of synonymy has not received adequate attention, especially in comparison with the issue of polysemy (Edmonds & Hirst, 2002; Divjak, 2006; Divjak & Gries, 2006; Taylor, 2002). Recently, thanks to an increased interest in lexical semantics brought about by advancements in Cognitive Linguistics and corpus linguistics, synonymy has gained increased attention. There have been some interesting and informative studies of synonymous adjectives and verbs using a corpus-based behavioral-profile (BP) approach (Divjak, 2006; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996; Janda & Solovyev, 2009; Liu, 2010).

The corpus-based BP approach is built on the theory that the meaning of a lexical item correlates closely with its behavioral profile or distributional patterns. Although Hanks (1996) is believed to have coined the term "behavioral profile" for describing the distributional patterns

of lexical items, the use of distributional patterns in lexical analysis originated with the theory advanced by Firth and his followers Halliday and Sinclair. In this theory, "the complete meaning of a word is always contextual" and a word is known "by the company it keeps" (Firth, 1957, pp.7, 11). As a result, "[i]n a lexical analysis, it is the lexical restriction which is under focus: the extent to which an item is specified by its collocational environment" (Halliday, 1966, p.156). In other words, "the tendencies of [lexical] items to collocate with each other" should be the focus of lexical study (Sinclair, 1966, p.411). Many comprehensive corpus-based lexical studies have since demonstrated how the collocation and other distributional patterns of lexical items determine their meanings (e.g., Hoey, 2005; Sinclair, 1987, 2004; Stubbs, 2001).

In the study of synonymy, the contexts in which certain collocates are used over others reveal the fine-grained semantic differences of a set of synonyms (Gries & Otani, 2010; Hanks, 1996; Liu, 2010). While collocates have proven effective in differentiating synonyms, other contextual (including syntactical/morphological) information can be equally informative (Arppe, 2008, 2009; Divjak, 2006; Divjak & Gries, 2006; Gries & Otani, 2010; Janda & Solovyev, 2009). For instance, by concentrating on the grammar constructions that individual nouns typically appear in and using Chi-square and hierarchical cluster analysis (HCA), Janda & Solovyev (2009) effectively identified the constructional profiles of the Russian nouns for *sadness* and *happiness* and accurately determined the semantic patterns of the synonyms in each set. In short, aided by powerful corpus search engines and using sophisticated statistical procedures such as HCA and logistic regression, the BP approach is able to effectively and precisely uncover the semantic and usage patterns of synonymous words (Arppe, 2008, 2009; Divjak, 2006; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996; Janda & Solovyev, 2009; Liu, 2010). However, most BP studies on synonyms so far have dealt with adjectives and verbs. Janda & Solovyev's (2009) study appears to be the only exception. More BP research on synonymous nouns and adverbs is needed.

The unique function and focus of the BP approach should also be helpful in enhancing our understanding of both the semasiological and onomasiological aspects of synonymous nouns. Contemporary research on lexical semantics distinguishes between semasiology and onomasiology (Baldinger, 1980; Dirven & Verspoor, 2004; Geeraerts, 2002, 2010; Geeraerts, et al. 1994). The difference between semasiology and

onomasiology is "the distinction between *meaning* and *naming*: semasiology takes its starting point in the word as a form, and charts the meanings that the word can occur with; onomasiology takes its starting point in a concept, and investigates by which different expressions the concept can be designated, or named" (Geeraerts, 2010, p.23). The selection of a lexical item for a referent (meaning) is determined by both semasiological and onomasiological salience as well as by some sociolinguistic factors such as regional dialects (Dirven & Verspoor, 2004; Geeraerts, et al., 1994; Grondelaers & Geeraerts, 2003). A definition of semasiological and onomasiological salience will be given below in section *Key Terminology*.

While BP research is uniquely useful in understanding the usage patterns of synonyms, it has the limitation of not being able to directly inquire of the producers of the language data why they selected a given item in a synonym set the way they did. The latter information may only be obtained via elicited language data, a type of data that recent research has shown to be valuable, especially when used in combination with corpus data, in the study of synonyms (Arppe & Järvikivi, 2007b; Divjak & Gries, 2008) and other linguistic items (Arppe & Järvikivi, 2007a; Featherston, 2005; Gries, 2002; Gries, et al., 2005a, 2005b). Results from the analysis of elicited data may both corroborate findings from corpus research and add additional information about the linguistic usages being examined (Featherston, 2005; Gries, 2002; Gries, et al., 2005a, 2005b; Kempen & Harbusch, 2005).

Forced choice and acceptability/similarity judgment are useful data elicitation methods for research on synonymy (Arppe & Järvikivi, 2007b; Divjak & Gries, 2008). In the forced-choice method, subjects are asked to complete a sentence by choosing a word from a set that they consider the most appropriate in the context. In acceptability judgment, subjects judge the acceptability of sentences that contain the concerned synonym in various contexts. In similarity judgment, subjects either judge the similarity between the synonyms in a set directly or sort the synonyms based on their similarity (e.g., Divjak & Gries, 2008). The study results from data so elicited can be used to compare and verify findings from corpus data. Furthermore, by appropriately manipulating the data elicitation method and controlling certain factors such as contexts, these methods can also generate data regarding participants' decision-making process (Gilquin & Gries, 2009). A more direct method to identify this information is to ask participants to explain the rationales for their choice/judgment

decisions. None of the existing studies on lexical usages that involve elicited data appears to have asked their subjects to explain the rationales of their decisions. Learning the reasons why speakers/writers select a given synonym over its alternatives is important for us to understand how synonyms are used.

Rationale and Purpose of the Study

Given 1) the importance of synonymy, 2) the effectiveness of corpus/elicited data examination in the study of synonymy, and 3) the inadequate attention that synonymous nouns have received so far, this study aims to use both corpus and elicited data to examine the use of two sets of synonymous nouns (*authority/power/right* and *duty/obligation/responsibility*). The selection of the synonyms was based on a close consultation of the following six leading dictionaries and thesauruses: *American Heritage Dictionary* (2006), *American Heritage College Thesaurus* (2004), *Merriam-Webster's Dictionary and Thesaurus* (2006), *Oxford Dictionary of American English* (2005), *Oxford English Dictionary* (*OED*): online (2010), and *Oxford American Thesaurus of Current English* (1999). The three nouns in each set are chosen because they are used in all the consulted dictionaries/thesauruses to define one another. Of course, the selected nouns each have other synonyms but the latter are excluded because their meanings are not shared by all of the three nouns in each set. For example, *privilege* and *prerogative* are synonyms of *right*, but not of *authority/power*, and hence are excluded.

This study intends to determine the fine-grained semantic differences among the nouns in each set and the key factors governing language users' decision-making pertaining to the two sets of synonyms. The study consists of two parts: 1) a narrowly-scoped BP analysis of the usage patterns of the two sets of synonymous nouns, focusing exclusively on the collocates of the nouns, and 2) a forced-choice study where the subjects were also asked to describe the rationales of their choices. The latter was conducted after the former was completed.

Key Terminology: Semasiological Salience, Onomasiological Salience, and Construal

According to (Geeraerts, et al., 1994; Grondelaers & Geeraerts, 2003), semasiological salience refers to the degree of prototypicality of the member (a word) of a category/concept for the category/concept.

For instance, when the word "car" is used for a passenger vehicle that shares characteristics of both a car and a van, it means that "car" is more prototypical for this type of vehicle and hence has more semasiological salience. Onomasiological salience, on the other hand, concerns the degree of entrenchment of a word/member for a category/concept, i.e., how frequently a lexical item, relative to its alternative members (synonyms in the case of synonymy), is used for a category/concept. The more frequently a lexical item is used, the higher its onomasiological salience is. Research has shown that semasiological salience and onomasiological salience are positively correlated (Geeraerts, et al., 1994; Grondelaers & Geeraerts, 2003). The two types of salience index essentially the same phenomenon from two different perspectives (i.e., meaning vs. naming perspective). However, while onomasiological salience is straightforwardly measured "by computing the ratio between the number of times that a lexical item is chosen as a name for a particular (set of) referent(s), and the total corpus frequency of that (set of) referent(s)" (Grondelaers & Geeraerts, 2003, p.75), the method for measuring semasiological salience has proven to be less straightforward as it allows different methods, which often lead to different results (Geeraerts, p.c.). Given the essentially identical nature of what the two types of salience measure and the difficulty of calculating semasiological salience, this study focuses mainly on onomasiological salience, hereafter, referred to as "salience" or "lexical salience."

Salience also has a few closely-related terms: frequency, entrenchment, and conventional usage. Frequency is connected with salience and entrenchment as noted above, and entrenchment has important consequences for conventional use. For example, the phrase *heavy rain* boasts a very high salience compared with its synonymous items like *big/hard/strong rain*; consequently, *heavy rain* is often used as a set phrase. Thus, highly salient lexical items tend to become conventional usages. This is how conventional usage is tied to salience. However, although these terms are closely related, they are not identical. A highly salient lexical item may not always be entrenched or become a conventional usage. This has been shown in a few studies where subjects were unable to give or identify the most common collocations of a given word when prompted to do so (McGee, 2009; Nordquist, 2009). While various external/internal factors might be responsible for such a result as acknowledged by the authors of the studies, the findings do, nonetheless, raise valid concerns about unequivocally equating salience with entrenchment or conventional usage.

Semasiological salience also has one closely-related term: prototypicality. When a lexical item has the highest semasiological salience, it has the prototypical meaning for the target concept (certainly more so than its alternatives do), as shown in the aforementioned example of *car* vs. *van*. Semasiology takes as its starting words and their meanings, especially their prototypical meanings. In deciding which synonym most prototypically expresses the concept at hand, we are engaging in semasiological operations and making a semasiological decision. In making such decisions, we must, however, also take into consideration the context at hand. The operations and issues involved in this semasiological decision-making process are actually the same as those involved in construal, a well-known key concept in cognitive linguistics. Scholars have shown that construal, along with its operations, plays a crucial role in language use (Croft & Cruse, 2004; Langacker, 1991, 2008). Construal operations include "judgment/comparison," "selection," "viewpoint" (Croft & Cruse, 2004, p.46).[2] Given semasiological operations and construal operations mean the same thing in this study, for simplicity purposes, only the term construal will be used hereafter.

CORPUS STUDY

Corpus Used

The corpus used in this study is the online Corpus of Contemporary American English (COCA) provided by Mark Davies (2010) of Brigham Young University. An American English corpus was used because the subjects in the forced-choice study were also Americans. COCA was chosen also because of its contemporary and representative data as well as its user-friendly search functions. When the analysis was done in 2010, COCA contained slightly over 400 million words with language data covering a twenty-year span (1990 to 2010, approximately 20 million per year).

Focus and Method of Corpus Query

The main immediate collocates of nouns include determiners (e.g., *a/the/any duty*), adjectives (e.g., *civil/legal/moral authority*), post-nominal infinitive modifiers (e.g., *authority/power/right to arrest/decide/vote*), and verbs (e.g., *exercise/have/use authority*). Of these different collocates, pre-nominal adjectives and post-nominal infinitive modifiers appear to be the most informative in revealing the nuances among the nouns in each set. This is because, while

the nature of the determiners (definite vs. indefinite) and the meanings of the verbs do not appear to offer much information about the meanings of the nouns,[3] the main attributive qualities of each noun provide very valuable information about the semantic difference(s) between the noun and its synonyms. For example, we typically say *individual right(s)* (not *individual authority*) but *regulatory authority/power* (not *regulatory right*). Similarly, we usually say *the right to vote* but the *authority/power to levy (taxes)*, not vice versa. Clearly, the type of *authority/power/right* or *duty/obligation/responsibility* that each noun in the set is designated as by its frequent modifiers constitutes an excellent indicator of the special meaning of the noun.

To identify the typical adjectives/infinitives of each of the nouns, I searched COCA for the top twenty most frequent items in each category via two types of queries: (1) frequency, i.e., the twenty adjectives and the infinitives that occur most frequently as the modifiers of the nouns (in both singular and plural forms)[4] and (2) Mutual Information (MI) score. The MI, first introduced to corpus analysis of lexis by Church & Hanks (1990, p.23), "compares the probability of observing x [word] and y [word] together (the joint probability) with the probabilities of observing x and y independently (chance)." An MI score around 0 suggests that the two words do not collocate while a score of 3 or higher indicates that the two items often co-occur. MI is not the only statistical procedure used for measuring collocations. T-score is also widely used, but both MI and T-scores have their weaknesses (Church, et al., 1991; Church, et al., 1994; Stubbs, 1995). For example, whereas MI gives extremely high scores to collocations of words that have a very low frequency but tend to co-occur (e.g., *univariate ANOVAs*), T-score often offers high ratings to collocations that are not very meaningful semantically such as *the happy* (Stubbs, 1995). MI is adopted in this study because (1) the COCA interface contains the MI calculation function and (2) MI favors collocating content words, which is the focus of the present study, whereas T-score favors function words (Church, et al., 1994). When used together, the frequency measure and the MI score can complement each other in better identifying the adjectives/infinitives that typically modify the nouns. This is because the frequency measure privileges those adjectives/infinitives that have an overall high frequency in the corpus yet it undervalues those that have a low general frequency but occur habitually with one of the nouns. The MI score can help overcome this disadvantage of the frequency measure, but it has its own aforementioned shortcoming.

The search of the twenty most common pre-/post-nominal modifiers

of the nouns in the two synonym sets by both frequency and the MI score was done by using the automatic collocation search functions offered by COCA's interface. In the process of identifying the most common adjectival/infinitive collocates of the nouns in COCA, I also took note of the less common ones. For example, while *to vote* is the typical infinitive collocate of *right* (i.e., *the right to vote*), my COCA query also showed some tokens of *power/authority to vote*. The reason for noting these less common collocates is that, to gain an accurate understanding of the usage patterns of the synonyms, it is imperative to learn when, how, and why these less common collocates were also selected by speakers/writers.

Query Results

Despite the different foci of the two query methods, the results of the corpus query (reported in Appendix I) show some noticeable overlap between the two measures. For example, eleven of the top twenty adjectives for *duty* by frequency also appeared in its top twenty adjectives by the MI score (a 55% overlap). Furthermore, there is also overlap across the different nouns. For instance, eleven of the most common adjectives of *duty* based on both frequency and MI score are also among the most common adjectives of both *obligation* and *responsibility*. Because of the overlaps, the actual total number of the pre-/post-nominal modifiers of the three nouns in each set is not 120 (the would-be number if there were no overlap). There are 85 adjectives and 82 infinitives for the *authority/power/right* set and 48 adjectives and 54 infinitives for the *duty/obligation/responsibility* set. It is clear from this result that there is far more overlap in the *duty/obligation/responsibility* set than in the *authority/power/right* set, suggesting that *duty/obligation/responsibility* are a closer set of synonyms than the *authority/power/right* set.

To determine the semantic differences among the nouns in each set, I classified the pre-/post-modifiers into broad semantic categories (shown in Appendix II). The reason for using a broad, rather than a finer-grained, semantic categorization is that there are already seven or eight categories in the current classification in each type of modifier (adjective and infinitive) in each noun set. Any finer categorization would result in too many categories with some having too few tokens for meaningful statistical analysis. The broad semantic classification was done based on dictionary definitions and encyclopedic knowledge. For example, *civil/collective/public/social* were grouped together because they were listed as synonyms in three of the consulted dictionaries/thesauruses. *Military/religious* were placed in

the same category because they were often mentioned in the dictionaries as words whose meanings contrast with those in the *civil* semantic category, as shown in the following definition of *civil* by *Oxford Dictionary of American English* (2005, p.117): when used "before a noun," *civil* is "connected with the public, not with the army or a church." *Appoint/arrest* etc. were grouped under "official acts" because, based on our encyclopedic knowledge, only individuals in official capacities can perform them. The classification results were checked and endorsed by two graduate research assistants, but no systematic, scientific cross-validation was performed. As a result, the classification may not have very good validity/reliability.

Based on the semantic classification, I queried and tabulated the total frequencies of the pre-/post-nominal modifiers by semantic group for each of the nouns in each set. The results are reported in four contingency tables, tables 1–4, given in the next section together with the results of the statistical analysis that was done.

Statistical Analysis, Results, and Discussion

Statistical methodology used

A multi-factorial test called hierarchical configural factorial analysis (HCFA) was conducted to determine whether the distributions of the three nouns among the different semantic types of the modifiers in each table were significantly different. The statistical procedure was done by employing Gries's (2004) HCFA 3.2 using the R statistical software package. I entered the data from each of the four contingency tables (i.e., one table analysis at a time) into the HCFA program and selected the more powerful Holme-adjustment option for the adjustment of *p* values of the results. The statistical procedure produced informative results that consisted of not only the overall results of a Chi-square test for the entire contingency table but also the detailed *post-hoc* test results for each cell/distribution in the table, including the expected frequency, Chi-square and significance values, and *Q*-effective size.[5] The overall Chi-square test results tell whether there is a significant difference among all the cells (the overall distributions) in the table. The *post-hoc* results for the individual cells/distributions reveal which cell frequencies in the contingency table are significantly higher or significantly lower than expected. A cell frequency significantly higher than expected is called a type whereas a cell frequency that is significantly lower than expected is an antitype. Remaining cell frequencies are marked as "not significant" in the decision column of the HCFA's results printout.

Results and discussion

The HCFA results indicate that there was an overall significant difference among the distributions in each of the four tables. More importantly, the *post-hoc* results for the individual cells (included in tables 1–4) clearly showed which nouns are used significantly more or less with which semantic group(s) of pre-/post-modifiers. The latter results helped successfully identify most of the semantic differences among the synonymous nouns.

Concerning the distribution of *authority/power/right* among their adjective semantic groups, *right* is a type only in the *civil* and *individual* semantic groups, i.e., two groups concerned with civil and personal power/privileges. In fact, due to its extremely high frequency in these two semantic groups, *right* is an antitype in all of the other adjective groups, including even the *constitutional/legal* and the *other* groups where *right* actually has either the highest or a very high frequency. In comparison, *authority* and *power* are both antitypes in the *civil* and *individual* groups and are types in most of the other groups, especially those of official nature (e.g., *constitutional/legal* and *convening/governmental/regulatory*). Therefore, *authority* and *power* are closer in meaning to each other than they are to *right*. A similar pattern is also found in the distribution of the three nouns among the semantic groups of their modifying infinitives: *right* is a type with infinitives expressing actions that are mainly of individual/private nature (e.g., *ask/choose/live*) but an antitype with infinitives expressing official activities (e.g., *appoint/arrest/protect*). Concerning the difference(s) between *authority* and *power*, the results show *power* is a type (the only one) with the following three semantic groups where *authority* is not: the *economic/political* adjective group and the *change/create* and *help/protect* infinitive groups. More importantly, although *authority* is neither a type nor an antitype with these three semantic groups, its frequencies in all three were lower than expected, even though not significantly. This fact of *power* being the only noun with significantly higher frequency with these three groups may suggest that *power* has force such as *economic/political* and other natural and social forces as its unique source of power. This fact also helps explain why *power* is the only type with the "*to change/create* ... things" infinitive group: having force as its source of power, it has more ability to *change/create* things than *authority/right* do.

In short, the corpus findings suggest that *right* refers prototypically to power/privileges that are largely personal in nature, bestowed to an individual by birth or constitution, whereas *authority/power* prototypically

refer to capacity or power that is mainly official in nature and is often derived from an office a person holds, and, in the case of *power*, from force. A check of the six dictionaries and thesauruses (mentioned in *Rationale and Purpose of the study*) indicates that these identified prototypical meanings of the nouns were indeed among those listed in the dictionaries as can been seen in the concise synthesis of the dictionary/thesaurus-defined prototypical meanings reported in Table 5. The only prototypical semantic feature not quite clearly shown in the corpus findings is that the source of power for *authority* can be knowledge/exemplary behavior/prestige as shown in expressions like *have moral authority* or *have authority on an issue/subject*. Yet a close reexamination of the corpus results suggests the failure of the corpus results to show this unique semantic feature of *authority* was the result of the broad semantic grouping used. While both *authority* and *power* are each a type in the *moral/military/religious* semantic group, their collocation frequencies with *moral* differ significantly. *Authority* boasts a far higher frequency with *moral* than *power* does: a ratio of 523:47 in COCA. *Moral authority* typically comes from exemplary behaviors. Thus, this corpus finding does corroborate the dictionary definition regarding exemplary behavior/prestige being a main source of power/right for *authority*.

Concerning the *duty/obligation/responsibility* synonym set, the results indicate that these three synonyms are a much closer set semantically than the *authority/power/right* set, a finding also shown in the overall much higher overlap in the modifiers between the three nouns reported in section *Query Results*. This is evidenced here by the fact that, whereas in the results for *authority/power/right* there are only four cell frequencies that are neither type nor antitype (one in the "adjectives" table and three in the "infinitives" table), there are nineteen such "no significant difference" cell frequencies in the results for *duty/obligation/responsibility* (seven in the "adjectives" table and twelve in the "infinitives" table). However, despite all this, *duty*, *obligation*, and *responsibility* still exhibit some semantic differences. First, *responsibility* is the only type in the *civic/individual* and *corporate/financial* adjective groups; *duty* is the only type in the *administrative/professional*, *military/religious*, and *onerous/sacred* adjective groups; *obligation* is the only type in the *constitutional/legal* and *mutual/reciprocal* groups. It is also necessary to note, though, that although *responsibility* is not a type in the *administrative/professional* group, it is not an antitype either. Similarly, although *duty* is not a type in the *constitutional/legal* group, it is not an antitype either in this group.

Table 1: Distribution of the semantic groups of adjectives before *authority/power/right*

	Civil Social	Constitutional Legal	Convening Governmental (official)	Economic Political	Ethnical National	Individual Natural	Moral Military Religious	Other
Authority	582 A	774 T	1,322 T	429	278 T	200 A	1,062 T	139 A
Power	443 A	715 T	784 T	2,781 T	1,037 T	400 A	1,561 T	1,204 T
Right	10,681 T	1,340 A	190 A	884 A	338 A	16,143 T	455 A	1,065 A

Notes: 1. For lack of space, only a few representative adjectives are listed in each group, and some long words are abbreviated. 2. A cell frequency followed by the letter T is a "type" based on the HCFA test while a cell frequency followed by an A is an "antitype." A cell frequency followed by no letter is neither.

Table 2: Distribution of the semantic groups of infinitives after *authority/power/right*

	Affect Coerce	Appoint Arrest (official acts)	Ask (for) Speak	Change Create Stop	Choose Decide Vote	Help Keep Protect	Live (other individual acts)	Other
Authority	104 T	457 T	96 A	109	288 A	73	7A	299 T
Power	347 T	575 T	167 A	600 T	688 A	279 T	22 A	316 A
Right	238 A	268 A	1,616 T	383 A	2,784 T	294 A	922 T	1,221

Table 3: Distribution of the semantic groups of adjectives before *duty/obligations/responsibility*

	Administrative Professional Regulatory	Civic Individual Social	Constitutional Legal	Corporate Financial	Ethical Military Religious	Familial Filial	Mutual Reciprocal	Onerous Sacred
Duty	287 T	312 A	330	24 A	1,237 T	123	27 A	215 T
Obligation	74 A	297 A	434 T	150	270 A	58	92 T	50
Responsibility	369	2,130 T	280 A	814 T	480 A	247	54 A	34 A

Table 4: Distribution of semantic groups of infinitives after *duty/obligations/responsibility*

	Accept Comply Obey	Assist Care Help	Defend Ensure Maintain	Disclose Inform Report	Find Get	Investigate Monitor Prosecute	Other
Duty	46 T	252 A	268	189 T	35	31	107
Obligation	55 T	455 T	261 A	166	38	19	117
Responsibility	6 A	458	479 T	119 A	72	24	121

Table 5: Synthesis of dictionary/thesaurus/corpus-finding based prototypical meanings of *authority/power/right*

	authority	*power*	*right*
Source of power/ right	constitution/law, office, knowledge/ exemplary behavior/ prestige	constitution/law, office, force (especially economic/military/ political force)	constitution/law, birth
Nature of power/ right	official ability	official as well as individual/group ability	individual/natural prerogative, privilege, etc.

These distributional patterns together help reveal the main semantic differences among the three nouns. Whereas *responsibility* may refer to things of both personal and professional nature that one should do, *duty* refers mainly to things that one must do due to one's office, profession, and beliefs/morals, including even those that are undesirable as evidenced by collocations such as *onerous duty*. Like *duty*, *obligation* is often something one has to do whether one likes to or not. However, *obligation* differs from *duty* in that it is often necessitated by a mutual agreement/commitment rather than by one's office or beliefs, as shown in the frequent occurrence of the noun with the adjectives *mutual* and *reciprocal*. These differences are also shown in the distribution patterns of the three nouns among the semantic groups of their modifying infinitives. *Duty* and *obligation* are types in the "*comply/obey*" infinitive group where *responsibility* is an antitype. Similarly, *duty* is a type with *obligation* being neither a type nor an antitype in the *disclose/report* group where *responsibility* is again an antitype. *Comply/obey/disclose* are often not actions individuals like to perform; they are things they must do by law or a rule. In short, *duty* and *obligation* are much stronger than *responsibility* in terms of the commanded degree of commitment/dedication/necessity.

A check of the definitions of the nouns in the aforementioned dictionaries/ thesauruses also confirmed the corpus findings regarding the prototypical meanings of the synonyms, although none of the dictionaries explicitly mentioned that *duty/obligation* (especially *duty*) could be something undesirable and none explicitly indicated *duty/obligation* were stronger terms than *responsibility*. Table 6 concisely synthesizes the prototypical meanings of the three nouns listed in the dictionaries/thesauruses and the additional semantic nuances identified by

the corpus analysis.

Table 6: Synthesis of dictionary/thesaurus/corpus-finding based prototypical meanings of *duty/obligation/responsibility*

	duty	obligation	responsibility
Required mainly by	position, law, custom, belief,	position, law, custom, promise/contract,	position, law, custom
Desirability*	can be both desirable and undesirable	can be both	mostly desirable
Degree of necessity*	stronger	stronger	weaker

* Prototypical semantic features based on the results of the corpus analysis only.

The results also show that in each synonym set, one member is used far more frequently and also more broadly across the semantic groups of modifiers. *Right* and *responsibility* each boast a much higher overall salience than the other members in their respective sets, as can be seen in their onomasiological salience measures reported in Table 7. The salience measures were computed using Grondelaers & Geeraerts's (2003) procedures described in section *Key Terminology*. The main reason for the extremely high overall salience of *right* is its wider semantic mapping compared with those of *duty* and *obligation*, as is evidenced by its high frequency with the modifier in most of the semantic groups. As mentioned above, although, due to its extremely high frequency with adjectives in the *civil/individual* semantic groups, *right* is an antitype statistically in many of the adjective and infinitive semantic groups, it actually has a high frequency in these groups including the *constitutional/legal* adjective group where *right* boasts the highest frequency. A close reading of some of the tokens of *right* with the various adjectives in COCA provides further evidence of its salience across semantic groups of modifiers. For instance, *right* is used in situations where *authority* or *power* is typically used. For instance, generally, whether the U.S. President or Congress should be the one to declare war is an issue of *power* (or *authority*), i.e., which of the two is given the *power* or *authority* to declare war. Yet, the COCA data show that some politicians and scholars used the word *right* in this case, as shown in the following example:

> "Here we are debating between Congress and the President who has the *right* to declare war."

Table 7: Overall salience measure

Noun Set 1	Ratio	Noun Set 2	Ratio
authority	6,219 : 56,924(10.93%)	*duty*	3,483 : 11,706(29.75%)
power	11,919 : 56,924(20.94%)	*obligation*	2,536 : 11,706(21.95%)
right	38,786 : 56,924(68.14%)	*responsibility*	5,687 : 11,706(48.58%)

Regarding the high salience of *responsibility* in its set, although it is a type only in the *civic/individual/social* and *corporate/financial* groups of adjectives, *responsibility* also has a high frequency in other adjective groups including the *administrative/professional* group where it claims the highest frequency among the three nouns. A reading of some of the tokens of *responsibility* used in COCA also shows that it often appears in collocations where traditionally *duty* is used. For instance, generally, what a person is supposed to do for family members is considered a duty, e.g., *fatherly/filial/motherly/wifely duty*. Yet, COCA shows over a dozen tokens of *fatherly/filial responsibility*.

Overall, the major distributional patterns of the nouns help illustrate the main semantic differences among the nouns in each set. However, they do not seem able to reveal 1) some fine-grained differences that appear to exist among the synonyms and 2) the reasons causing the differences. Furthermore, the corpus results show that the synonyms in each set, while displaying many different major distributional patterns, also exhibited some similar usage patterns. As already mentioned, the nouns in each set sometimes take the same pre-/post-nominal modifiers (e.g., *civic duty/obligation/responsibility*; *the authority/power/right to declare war*) although each noun's frequency with the modifiers varies. It is not clear whether the different nouns when modified by the same adjective or infinitive express the same meaning. For example, do *the right to vote* and *the power to vote* phrases mean the same thing? More importantly, what were the motivations for the different choices speakers/writers made? The latter question is of particular importance in the cases when a speaker/writer opts for a usage that differs from the usage with the highest onomasiological salience, as is shown in the following example from COCA when the writer of a short letter to *Ebonics* (an African-American magazine) referred to voting as a power rather than a right:

> "... our ancestors fought so hard and died to give us the *power to vote*. Let's not let them down. VOTE!!"

As we know, voting is typically viewed as a right as evidenced by the high frequency of the collocation *the right to vote* in COCA (700 total tokens), which dwarfs the very low frequency of the phrase *the power to vote* (7 total tokens). By choosing this rare collocation, the writer must have construed voting as an issue of *power* rather than *right*, viewing voting as an act of power that could shape the government and policies in America and change the lives of African-Americans. Similarly, those speakers/writers who chose the word *right* in the debate about whether the U.S. Congress or the President has the *authority/power to declare war* likely construed the act to declare war mainly as an issue of *right* rather than an issue of *authority/power*.

In other words, via construal operations of judgment/comparison regarding the synonymous nouns in relation to what they wanted to convey, the speakers/writers in such a case determined that the given context evoked a concept that was not the prototypical reading of the ononmasiologically most salient concept and thus selected instead a synonym whose prototypical meaning corresponded more closely to the contextually relevant concept, a practice similar in nature to what was found in people's choice of members/words for categories (Geeraerts, et al., 1994).[6] In selecting a less salient synonym, the speaker/writer, as Arppe (2008, p.243) suggested in his study of synonymous Finnish verbs, can emphasize or better express a "distinct aspect" of the concept than the other synonyms (including the most salient one) do. A good understanding of how these construal operations work should help us better understand the use of synonymous nouns. For this reason, we now turn to the forced-choice study.

FORCED-CHOICE STUDY

Instrument

32 forced-choice questions were involved in this study (see Appendix III). These questions were part of a 76-item instrument for study of synonyms that involved synonymous adjectives and adverbs in addition to the 32 questions on synonymous nouns used in this study. Each of the 32 questions for this study consisted of a sentence/passage from COCA in which a noun (one of the synonyms) was deleted. Some of the sentences were slightly edited for clarity and brevity. In completing each of the questions, the subjects were required to fill in the missing noun by selecting from the provided synonymous nouns based on the contextual information,

especially the collocation clues. If a subject really felt two or all three choices were acceptable, he/she was allowed to rank the choices. In such a case, the first choice is treated as the subject's choice in the data analysis. In addition, the subjects were asked to explain the rationales for their selection decisions. The fact that the subjects were asked to make selections and explain their decisions simultaneously might have affected their decisions and, in turn, the validity and reliability of the findings. This is because having to explain their selections would likely have caused some subjects to second-guess and change their original/intuitive choices. The results of this forced-choice study should thus be taken with caution.

It is necessary to note that, whereas most of the adjectives and infinitives included in the questions as contextual clues were those that appeared on the top 20 most frequent list, I also included a few that were not among the top 20 list, such as *sad* and *fatherly*, because they and their modified nouns form collocations that were highly salient relative to their alternative collocations (e.g., where there were 16 tokens of *sad duty*, there was no *sad obligation* and only 1 *sad responsibility*, resulting in *sad duty* boasting a salience of 16/17 or 94%). The 32 questions may be divided into two groups based on whether the speaker/writer in the COCA sentence used the noun in the given collocation with the highest salience in COCA or not. Group one consists of 13 (41% of the total) questions, including questions 2, 4, 9, 13, 14, 16, 19, 21, 22, 25, 26, 31, and 32. In each of these questions, the speaker/writer of the COCA sentence used the noun that boasts the highest salience in the given collocation compared with the other two nouns in the collocation. A noun is said to have the highest salience in a given collocation when alternative collocations have lower salience. Hence, this salience differs from the overall salience of a noun discussed in section *Query Results*. This distinction is important because the noun in a collocation that has the highest salience may not be the noun that has the highest overall salience. If we recall, of the *duty/obligation/responsibility* set, *responsibility* boasts the highest overall salience. Yet, in the *religious duty/obligation/responsibility* collocation set, *religious duty* claims the highest salience. Group two is composed of 19 questions (59% of the total): 1, 3, 5, 6, 7, 8, 10, 11, 12, 15, 17, 18, 20, 23, 24, 27, 28, 29, and 30. In each of these questions, the COCA speaker/writer did not use the noun collocation with the highest salience, e.g., in the case of using *religious responsibility* instead of the most salient *religious duty*.

Table 8 contains the computed degrees of the salience of the

collocations meant to be tested in the questionnaire. Because each of the tested collocations was used in more than one question (e.g., *authority/power/right to vote* was tested in four questions: 10/11/13/15), the actual number of meant-to-be tested collocations were essentially 10, not 32. It is clear from the degrees of salience of the collocations that only some of the collocations with the highest salience in their respective sets show an extremely high salience (e.g., *sad duty/right to vote*); many others record actually a salience not really much higher than the next alternative (e.g., *civic duty* vs. *civic responsibility*). It is very important to bear this information in mind because in cases where the levels of salience of the synonym collocations in a set are very similar, it could mean that these collocations are basically interchangeable, a possibility Arppe (2008) found in his study. So, in such a case, when a speaker/writer did not use the synonym with the highest salience, we cannot say for sure that the selection was caused by a unique construal on the part of the speaker/writer. In contrast, in cases where the speakers/writers did not use the synonym with the highest salience that boasted an extremely high degree of salience (e.g., *right to vote*) but opted for one with a very low salience (*power to vote*), chances are very high that the selection decision resulted from a unique construal.

Table 8: Degrees of salience of the collocations tested

Contextual Clue	Collocation Salience (High to Low)
civic-	***civic-duty*** (175/364=48%), *-responsibility* (164/364=45%), -obligation (25/364=7%)
*fatherly/motherly-**	***fatherly-/motherly-duty*** (11/13=85%), *-obligation* (1/13=7.5%), *-responsibility* (1/13=7.5%)
religious-	***religious-duty*** (89/170=52%), *-obligation* (69/170=41%), *-responsibility* (12/170=7%)
sad-	***sad-duty*** (16/17=94%), *-obligation* (0/17=0%), *-responsibility* (1/17=6%)
social-	***social-responsibility*** (610/740=82%), *-obligation* (96/740=13%), *-duty* (34/740=5%)
-to arrest	***authority-to arrest*** (22/45=49%), *power-* (13/45=29%), *right-* (10/45=22%)
-to declare war	***power-to declare war*** (33/51=65%), *authority-* (10/51=19%), *right-* (8/51=16%)
-to fire (people)	***right-to fire (people)*** (29/59=49%), *power-* (22/59=37%), *authority-* (8/59=14%)

(continued)

Contextual Clue	Collocation Salience (High to Low)
-to vote	***right-to vote*** (700/708=99%), *power-* (7/708=<1%), *authority-* (1/708=<1%)
*-to protect/take care of/deploy (police)**	***responsibility-to protect, etc.*** (181/431=42%), *duty-* (140/431=32%), *obligation-* (110/431=26%)

* These collocation clues were combined due to their closely-related meaning and a low frequency of some of them.

Participants

The participants were 42 native English-speaking students at a large public university in the Southeast of the U.S. 12 of them were undergraduate students taking an upper division English class and the remaining 30 were graduate students majoring in English or other language studies. Because the participants were asked to give explanations of the rationales for their synonym choices, they were given no time limit to complete the questionnaire. Most of the participants majored in English. This could have an influence on their performance on the questionnaire and the results of the study.

Results and Discussion

The results will be discussed in two subsections: 1) the synonymous noun selections the subjects made and 2) the rationales the subjects provided for their choices, although in a few places some subjects' explanations will be cited in the first subsection to help explain some of the seemingly unusual selection patterns.

Synonymous noun selections

The descriptive results (i.e., how many subjects chose each of the nouns in each question) are included in Appendix III. The number after each noun in a question is the number of subjects who selected the noun. The noun that is underlined is the noun used by the original speaker/writer in COCA. The boldfaced noun is the one that boasts the highest salience in the collocation according to the COCA data. A noun that is both underlined and boldfaced happens to be the one used by the COCA speaker/writer and also with the highest salience. Table 9 presents summary information comparing the subjects' response patterns with those of the COCA speakers under different scenarios. The information indicates that the majority of the subjects selected the most salient noun collocations more often than the COCA speakers did (19

vs.13 times). Also when both groups were not selecting the most salient item in a question, they often did not select the same less-salient item. On only five questions in such a case did the two groups select the same noun.

Table 9: Summary/Comparison of the subjects' vs. COCA speakers' selection patterns

	Questions where the most salient collocation selected	Questions where the most salient collocation was NOT selected	Questions where the COCA speaker and a majority of the subjects selected the same collocation that was not the most salient
COCA Speakers	2, 4, 9, 13, 14, 16, 19, 21, 22, 25, 26, 31, 32 (**total: 13**)	1, 3, 5, 6, 7, 8, 10, 11, 12, 15, 17, 18, 20, 23, 24, 27, 28, 29, 30 (**total: 19**)	
Majority of the Survey Subjects	4, 6, 7, 9, 10, 11, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 30 (**total: 19**)	1, 2, 3, 5, 8, 12, 15, 23, 25, 28, 29, 31, 32 (**total: 13**)	3, 5, 15, 23, 29

A one-way Chi-square test on the subjects' responses reveals a significant difference among the subjects' choices on 27 of the 32 questions. The five questions with no significant difference are 6, 12, 15, 22, and 25. In each of these questions, none of the three noun collocations in a set was chosen by a majority (i.e., 21 or more subjects).[7] As such, these five questions are not included in the following comparison between the subjects' noun choices and those of the original COCA speakers/writers, but they will be discussed in a separate section afterwards.

In comparing the subjects' selections with those of the COCA speakers/writers, we first examine the results of the questions of group one, i.e., those where the original COCA speakers/writers used the noun collocation with the highest salience in COCA. Of the 13 questions in this group, 2 (22 and 25) showed no significant difference among the subjects' choices and hence are excluded here. In 8 (73%) of the remaining 11 questions (4, 9, 13, 14, 16, 19, 21, and 26), a majority of the subjects also selected the noun collocation used by the original speaker, i.e., the most salient one. This result suggests that in most of these questions,

salience also prevailed in the majority of the subjects' selections. This is understandable because the more salient a lexical item is, the more likely it is entrenched in the speakers' language. However, in 3 (27%) of the 11 questions in this group (2, 31, and 32), salience did not prevail for the majority of the subjects likely due to the latter's unique construal operations/decisions. What motivated their unique construals in these questions? This question will be explored after a discussion of the results of the questions of group two, i.e., those in each of which the COCA speaker/writer did not use the noun collocation with the highest salience.

Of the 19 questions in group two, 3 showed no significant difference among the subjects' choices (6, 12, and 15). Concerning the remaining 16 questions, only on 5 of them (31%) did a majority of the subjects concur with the COCA speakers/writers' unconventional choices: 3, 5, 8, 23, and 29. On 11 (69%) of the questions (1, 7, 10, 11, 17, 18, 20, 24, 27, 28, and 30), a majority dissented from the unique choices of the COCA speakers/writers. In 9 (82%) of these 11 questions (7, 10, 11, 17, 18, 20, 24, 27, and 30), the majority selected the noun collocations with the highest salience. In other words, salience again influenced the majority of the subjects' selections in these questions. However, as already mentioned, in three of the group one questions (2, 31, and 32), a majority of the subjects did not select the noun collocation with the highest significance and, in four of the group two questions (3, 5, 8, and 29), a majority also concurred with the COCA speakers/writers' choices of an item not having the highest salience. It seems that the subjects' construal prevailed over salience on these seven questions. A look at them indicates that questions 2, 3, and 5 all deal with the question of whether it is the *duty*, *obligation*, or *responsibility of* the government to protect/take care of its citizens. If we recall the corpus-based degrees of salience reported in Table 8, *responsibility to protect-* has the highest salience (42%) followed by *duty to protect-* (32%), and *obligation to protect-* (26%). The COCA speaker/writer in question 2 used *responsibility* (the one with the highest salience though not much higher than its two alternatives), but a majority of the subjects in this study selected *duty*. In question 3, the COCA speaker/writer used *duty* instead of *responsibility* and a majority of the subjects concurred. In question 5, the COCA speaker/writer used *obligation* and a majority of the subjects also concurred. Why did a majority of the subjects select *duty/obligation* instead of *responsibility*? If we recall, one of the key differences in the prototypical meanings of the nouns based on the corpus findings is that *duty* and *obligation* express a stronger sense of necessity than

responsibility. It seems that the *of the government* noun modifier used in these sentences contributed to these subjects' decision to use the stronger terms. Eleven subjects wrote in their explanations to the effect that they associated "government" with *duty* rather than the other two nouns or they considered protecting and taking care of citizens to be something a government had to do.

Question 8 is about whether Israel, when attacked by forces in Palestine, has the *authority*, *power*, or *right to declare war on Palestine*. As shown in Table 8, *power to declare war* has the highest salience. The COCA speaker/writer chose *right* instead of the more salient *power*, and the majority of the subjects in this study concurred. The subjects' response here differs from their responses to the other three questions on *authority/power/right to declare war* (1, 4, and 6) where either *power* or *authority* was the most popular choice. The reason that the majority of the subjects concurred with the COCA speaker/writer in selecting *right* in question 8 appears to be that, to them, the hypothetical declaration of war by Israel would be a result of it being attacked by forces in Palestine, which would give Israel the *right* to do so or would "justify the action" as explained by some of the subjects. In other words, in their construal operations, these subjects decided that the concept to be conveyed in this context was not what the most salient item (*power*) prototypically would express and thus selected, instead, a synonymous item (*right*) whose prototypical meaning, they believed, was closer to the concept in the current context.

Questions 29 and 32 deal with whether a government agency (county board of health) or company (GE) has the *authority*, *power*, or *right to fire its personnel*. As shown in Table 8, *right to fire people* has the highest salience. The COCA speaker/writer in question 29 used *authority* (the one with the lowest onomasiological salience), and a significant majority of the subjects concurred. In question 32, the COCA speaker/writer chose *right*, but the majority of the subjects dissented by selecting again *authority*. It seems that the subjects consistently believed that to fire an employee, an agency needs to have the authority, i.e., to be *authorized*. The fact that the majority of the subjects were English majors might have been responsible for such a linguistic-precision-based decision. Question 31 concerns whether it is a *social duty*, *obligation*, or *responsibility to engage in open and free competition without deception or fraud*. As shown in Table 8, *social responsibility* has by far the highest salience. The COCA speaker/writer indeed used *responsibility*, but a majority of the subjects selected *obligation*. This selection, however, contrasts with their selections in the other two questions on *social duty/obligation/responsibility*

(questions 27 and 30) where they chose *responsibility* when the COCA speakers/writers in each actually used either *duty* or *obligation*. Apparently, in question 31, the majority of the subjects dissented from the COCA speaker/writer by construing the need for businesses not to practice deception and fraud as an obligation, something stronger than responsibility. Their explanation for such a construal will be discussed in the next section.

Now let us examine the five questions where no significant difference was found among the subjects' noun selections. The first is question 6, which asks the subjects to decide whether the US Congress has the *authority*, *power*, or *right to declare war*. Unlike in the other three questions dealing with *authority/power/right to declare war* (1, 4, and 8) where a majority of the subjects selected one noun, there is no such clear majority on this question, although 20 subjects (close to a majority) did select *power*, the most salient item. One most likely reason for the no significant difference among the subjects' selections here seems to be that the sentence constituted a context where the three synonymous items are essentially interchangeable, one of the findings of Arppe's (2008) study.

The second no-significant-result question is question 12, which concerns whether it is a *religious duty*, *obligation*, or *responsibility to protect the Columbia River*. Unlike in the other two questions on *religious duty/obligation/responsibility* (questions 7 and 9) where most of the subjects selected *duty*, the noun with by far the highest salience in the collocation, the subjects were rather evenly divided in their choices in this question, showing a ratio of 13:14:15. The reason the subjects were divided (instead of mostly choosing *duty*) appears to be that in this question the *religious duty* is to *protect a river* (three subjects mentioned this point in explaining their choices as will be shown in the following section) whereas in questions 7 and 9 the *religious duty* is to *carry out a war* or to *kill enemies*. One other likely factor causing the fairly evenly divided selections here could be that this question involved two (not one) of the collocations tested in this study (though not by design): *religious duty/obligation/responsibility* and *duty/obligation/responsibility to protect*. A look at the degrees of salience in the two collocations shows that *religious duty*, the most salient in its set, has a salience of 52%, higher than the 42% salience of *responsibility to protect*, the most salient in its own set. Although there was no significant difference among the subjects' choices in this question, the fact that actually more subjects selected *responsibility* than those who selected *duty* (15 vs.13 subjects) certainly indicates that the more salient *religious duty* did not prevail. However, as indicated by the rationales

given by some of the subjects (to be discussed in detail in the next section), what motivated their selection of *responsibility* does not seem to be the "*to protect*" collocate, but the thing that was being protected: a river. To some of the subjects, *protecting a river* was not a religious but a secular cause, hence a *responsibility*, not a *duty*. Still, the interactional effects, in statistical terms, of having two immediate collocates (often one before and one after the noun) in the same context should be an interesting and important question to explore in synonym use. Yet a meaningful statistical analysis in this regard will require a substantial number of simultaneously co-occurring collocation cases, which will in turn entail a systematic corpus query and identification of such cases. Therefore, a statistical analysis in this sense is beyond the scope and space of this study. However, some qualitative and basic quantitative analysis of the issue (i.e., comparing the degrees of the salience of the two collocations and their effects) is done, as shown in the discussion of the interaction of *religious duty* and *responsibility of the government* just rendered, as well as in the earlier discussion regarding the effect of the *of the government* modifier in the selection in the *duty/obligation/responsibility to protect* collocation. Even though the "*of the government*" string was not an intended collocation tested in this study, it certainly could be considered a valid collocation of the *duty/obligation/responsibility* nouns.

The third question in the no-significant-result group, question 15, deals with whether the US Congress has the *authority*, *power*, or *right to vote up or down a trade agreement*. Unlike in the other three questions on *authority/power/right to vote* (10, 11, and 13) where a large majority selected *right*, there is no such majority on this question due likely to the fact that here it is to *vote up or down* something. To many of them, as some subjects mentioned, to *vote up or down* something was not really a *right* but an authorized/empowered ability. The fourth question in this group, question 22, asks the subjects to determine whether the FBI had the *authority*, *power*, or *right to arrest a group of people who had not done anything illegal at the time of arrest*. 17 subjects selected *right*, the noun with the lowest salience in the collocation, which helped result in a no significant differences among the three choices in this question. The reason for the 17 subjects to select *right* appeared to be the fact the individuals who were arrested in this sentence "had not done anything illegal at the time of arrest," a fact that likely made these subjects believe the FBI had no *right* (justification) to arrest the individuals. In other words, in their construal, the prototypical meaning of the most salient collocation *authority to arrest* did not fit the context. The final question in

this group, question 25, concerns whether university administrators have the *authority*, *power*, or *right to fire professors who are incompetent or irresponsible*. Unlike in the other *authority/power/right to fire people* questions (28, 29, and 32) where a majority of the subjects selected *authority* because, as mentioned earlier, they likely believed authorization was needed to fire people. The reason no majority selected *authority* here may have resulted from the negative attributes of the individuals being fired in this sentence: "professors who are incompetent or irresponsible." In the other questions related to firing, no description of the attributes of the individuals being fired was mentioned. It seems, to the subjects who did not choose *authority*, firing incompetent people might not need any authorization.

Of the five no-significant-difference questions, four (except question 6) appear to show that construal operations were also actively at work in these no-significant-difference cases and they led to quite evenly divided decisions rather than one shared by a majority. More importantly, the fact that the synonymous nouns in each of these sets were each selected by a fairly even number of subjects does not mean they were entirely interchangeable, for, as has just been shown, a given selection appears to emphasize one distinctive meaning that the other synonyms do not, an important finding of Arppe (2008) mentioned earlier. However, the results of question 6, as mentioned earlier, differs from the other questions as it seems to support the other finding of Arppe's (2008) study: sometimes when synonyms are distributed quite evenly, they are essentially interchangeable. The fact that only one out of the five no-significant difference questions supports this latter finding by Arppe might be because not enough number of questions and scenarios were included in this study.

Synonymous noun selection rationales

It is necessary to begin by noting that, although all subjects but two provided explanations, not all did so for all the questions. Furthermore, the level of detail in the explanations varied substantially from respondent to respondent and from question to question. Many subjects also used "see Quest X" in lieu of an explanation for questions on the same synonym set in the same context. Nonetheless, the explanations the subjects provided offer an interesting glimpse into the subjects' synonymous noun selection process.

A close reading and tabulation of the subjects' explanations indicates that the subjects' synonym selections were influenced by two major factors: 1) lexical salience and 2) the subjects' construal operations regarding the prototypical meanings of the synonymous nouns and the intended concept/meaning of the sentence/passage in a given question. These construal

operations helped the subjects determine which noun would best express the intended meaning, especially in the cases where the selected noun/collocation was not the one with the highest salience. The two factors often competed in shaping the subjects' decisions, as will be shown below.

The influence of salience is evidenced by the fact that many of the subjects, in explaining their choices of noun collocations such as *civic/sad/religious duty*, *right to vote*, and *social responsibility*, made one of the following statements: "This is what I often hear people say"; "I've often heard the phrase"; "idiomatic usage"; "common/most common/fixed phrase/usage/collocation/pairing"; "It sounds the best/right (when I read it aloud)"; and "one unit/a chunk." As explained in section *Key Terminology*, conventional usage is closely tied to salience because salient lexical collocations tend to be entrenched as conventional usages. Thus, when a subject mentioned conventional usage as the reason for his/her decision, it meant mainly that the high salience of the selected synonym/collocation dictated his/her decision. Indeed, the noun collocations that the subjects mentioned most often as conventional usages all have the highest salience in their respective sets, including *civic duty*, *right to vote*, and *social responsibility*. 61% of the subjects who chose *civic duty* over *civic obligation/responsibility* in questions 19, 21, and 24 mentioned the phrase being a common/set usage as the reason for their choice. 46% of those who selected *right to vote* over *authority/power to vote* in questions 10, 11, 13, and 15 also did so. One point needs some discussion is that while it is quite understandable for *right to vote* and *social responsibility* to be mentioned as conventional usages because both boast a very high salience (99% for *right to vote* and 82% for *social responsibility*), some may wonder why *civic duty* was mentioned as one (and actually mentioned the most often) when its salience, though the highest in its set, was only 48% followed by *civic responsibility* (45%). The answer to this seemingly puzzling question lies in the following fact. If we recall, the overall salience of *duty* in COCA (3,483 tokens with a 29.75% salience) is much lower than that of *responsibility* (5,687 tokens with a 48.59 salience). However, despite its much lower overall frequency, *duty* is used more often with *civic* than *responsibility* is. Consequently, *civic duty* is a much stronger collocation than *civic responsibility*, which is further evidenced by the fact *civic duty* registers a higher MI score (10.79) than the *civic responsibility* (9.89) (see Appendix I).

Besides salience, construal operations were also clearly at work as shown in some of the subjects' explanations. Of particular interest

were those operations that resulted in the choice of a less salient noun collocation over the most salient one. Here are some examples. The first one involves a subject's responses to the three *religious duty/obligation/responsibility* questions. While the subject chose *duty* in two of them (questions 7 and 9) because he/she thought *religious* and *duty* go together due to meaning and usage, he/she selected *responsibility* in the remaining question (question 12), arguing that the word *duty* in this sentence "doesn't fit the nature of the (seemingly secular) cause" (parentheses in the original quote). To this subject, while to carry out a holy war or to kill enemies was a *religious duty*, to protect the Columbia River was a secular cause and hence only a *responsibility*. In other words, according to this subject, the prototypical meaning of *religious duty* did not fit the concept in this context. In a similar example, in responding to the three *duty/obligation/responsibility of the government to* questions, a subject chose *duty* in two of them (questions 2 and 5) because "the government is required to protect the people" and "'duty' and 'government' fit together best"; yet, the subject selected *responsibility in* question 3, contending that the issue of bringing more security for the Palestinians "seems to be something that the government should do, but not that it is required to do" (underline added). In other words, normally the subject considered it was the government's *duty to protect/take care of its people*, but in question 3 the subject saw a uniqueness of the context that called for the use of *responsibility*. It is important to note that, concerning the *duty/obligation/responsibility of the government to* questions, most of the subjects made their decisions based on whether they thought "to protect or take care of citizens" was something the government was required to do. All those who thought it was chose *duty* or *obligation* but those who did not believe so selected *responsibility*.

As another example, in responding to question 27 where the COCA speaker/writer used *social duty*, four of the majority 24 subjects who selected *social responsibility* instead of *duty* mentioned salience as the reason for their choice, i.e., they believed that *social* and *responsibility* "go together" as a "common phrase." Yet, in answering question 31 where the COCA speaker/writer used *social responsibility*, these subjects, however, opted for *social obligation* because they believed that to engage in fair business practices without deception or fraud was something businesses should be forced/obliged to do since, in one subject's words, "business does not want to have any sort of responsibility." To these subjects, the prototypical meaning of *social responsibility* — the most salient noun collocation — was not adequate

for businesses based on their experience. One more example concerns two subjects' explanations for their choice of *power to vote for "None of the Above"* over the *right to vote ...* in question 10. It is necessary to note that in answering the other questions related to *authority/power/right to vote*, the two chose *the right to vote*. In justifying the choice of *power* in this question, one wrote, "'power' has to do with practical ability here. Although they're considering how much authority to give Congress [voters], we're talking about a very specific action that they will or won't be able to do." The other wrote, "Honestly, the other two [nouns] just seem not to fit well. 'Power' equates ability [here]." In other words, they thought the prototypical meaning of *right to vote* as a prerogative did not correspond to the concept in the context and decided to choose *power to vote* because *power* contains the sense of ability as part of its prototypical meaning (cf. Table 6 on the main meanings of the word).

The final example is one where a subject explicitly stated why he/she selected a less salient collocation. In responding to the three *civic duty/obligation/responsibility* questions, the subject chose *civic duty* in two of them (questions 19 and 24) because, in his/her words, "'Civic duty' is a common or usual phrase." However, in the remaining question (21), the subject selected *civic obligation* because, he/she wrote, "I chose against the usual phrase [duty] here because 'duty' is not strong enough." Obviously, here the subjects' unique construal of *obligation* being stronger than *duty* prevailed over salience.

In short, while the overall results of the elicited data show that lexical salience often dictates the subjects' decisions in the selection of synonymous nouns, the above examples from the subjects' explanations also indicate that, sometimes, construal operations lead to choices that defy salience. These results highlight construal operations and salience as two competing factors in the use of synonymous nouns. Another important finding we can glean from the subjects' explanations cited above is that when two synonyms are used in the same collocational context (e.g., *power to vote* vs. *right to vote* and *social obligation* vs. *social responsibility*), they do not actually mean exactly the same thing, at least not from the speaker/writer's perspective. A choice of a noun-collocation with a very low salience seems to always suggest that the speaker/writer did not believe the prototypical meaning of the most salient noun-collocation corresponded well to the concept in the given context and selected instead the item with a low salience whose prototypical meaning he/she considered a better fit for the concept.

CONCLUSIONS

Via a collocation-focused corpus analysis and a forced-choice questionnaire examination, this study has examined two sets of synonymous nouns. The corpus analysis reveals the differences among the semantic and usage patterns of the nouns in each set. The corpus analysis and the results of the forced-choice study jointly show that lexical salience and language users' construal are two key factors in the use of synonymous nouns. Due to the entrenchment effect of salience, a speaker/writer typically uses a synonymous noun collocation with the highest salience in a given context unless the speaker/writer's construal operations result in a decision that the prototypical meaning of the most salient item does not fit the concept being expressed. In the latter case, the speaker/writer will select a less salient synonymous item whose prototypical meaning corresponds better to the concept in question. The corpus analysis also seems to suggest an increased and broadened use of the synonymous noun with the overall highest salience (i.e., *right* and *responsibility* in their respective sets) in contexts/collocations where a less salient noun has been typically used. This finding appears to suggest that there is a certain degree of fluidity in the meanings of synonymous nouns and the internal semantic structure of a synonymous-noun set, a fluidity influenced by the competition between lexical salience and language users' construal.

Furthermore, this study has also validated some important previous research findings and theories about synonym use, including those of Arppe's (2008, 2009), Geeraerts, et al.'s (1994), and Grondelaers & Geeraerts (2003). In terms of research methodology, this study has demonstrated that collocation-focused corpus analysis and elicited data study not only triangulate but also complement each other in their findings about the usage patterns of synonymous nouns. The abundance of data and the effective query and sorting abilities of a corpus allow us to easily and accurately identify the overall semantic structure of a set of synonymous nouns. On the other hand, the forced-choice study that requires the subjects to explain their synonym choices enables us to understand 1) the motivations behind the speakers/writers' selection decisions and 2) the fact that the selection of a less-salient noun in a given context usually signifies a difference in meaning. Of course, further studies using the same or similar combined methodology are necessary for validating the results of this study.

Finally, this study has a few limitations. First, the corpus analysis was limited to noun collocations, specifically the adjectives and infinitives, of the

synonymous nouns. Future studies may include the examination of other contextual information of nouns, such as syntactic information. Second, in the forced-choice study, the subjects were asked to make selections and give rationales at the same time, a practice that could have affected the validity and reliability of the results. Third, except for only one question in the forced-choice study, the study did not examine how speakers'/writers' synonymous noun choice decision-making may be affected when two established collocations (one pre- and one post-nominal) are simultaneously involved in the same context. Fourth, the forced-choice study used a homogeneous group of subjects (graduate and undergraduate students), a group who were likely not as linguistically naïve as most of the general public. Furthermore, the study did not include information about the subjects' ethnic and socio-economic backgrounds. A much more diverse sample in these variables should be used in future studies in order to better identify which factors that drive synonym selection decisions are shared by speakers across socio-economic/educational groups and which factors are specific to a given socio-economic or educational group.

Notes

1. Synonymy is essentially near-synonymy because, as many linguists (Stubbs, 2001; Taylor, 2002) have argued, true synonyms are rare unless we include cross-dialect synonyms. Thus, all synonyms are truly near-synonyms, also known as plesionyms. However, for the sake of simplicity and consistency, "synonymy" will be used, instead of "near-synonymy/synonym," in the rest of the article.
2. For lack of space, no detailed discussion of construal operations is given here. The reader is referred to Croft & Cruse's (2004) Chapter 3 "Conceptualization and Construal Operations."
3. It is necessary to note that if time and space are allowed, it may be worthwhile to examine these collocating structures. However, it is beyond the space and scope of this study.
4. For simplicity purposes, hereafter, in reporting the number of tokens of a noun, only the singular form will be used even though the number includes both its singular and plural forms.
5. The HCFA *r* script and the results printouts have been submitted to the website of *Cognitive Linguistics*. Also, for further information about how to use this HCFA program, read Gries (2009, pp.248–252).
6. I owe this theoretical interpretation of what the speakers/writers are doing in a synonym selection in such cases to an anonymous reviewer.
7. Questions 5 and 30 are exception in this regard. Because two subjects in each of the two questions did not select any of the nouns, the valid number of subjects

making choices in the two questions became 40, not 42 and the number for forming a majority is down to 20.

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APPENDIX I: The Most Common Pre-/Post-Nominal Modifiers by Frequency and MI Score*

Adjectives for Authority/Power/Right					
Authority		*Power*		*Right*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
moral 523	provisional 12.14	political 1,912	diacritical 12.16	human 12,531	unalienable 12.68
political 413	fast-track 12.09	military 928	subject-constituting 11.95	civil 10,381	inalienable 12.14
legal 361	self-governing 11.66	economic 679	recuperative 11.03	constitutional 1,483	private-property 11.96
civil 211	supranational 11.34	American 421	delegated 11.02	gay 992	bragging 11.75
regulatory 191	delegated 11.21	healing 313	curative 10.57	equal 852	free-speech 11.16
military 188	convening 10.97	black 242	transformative 10.37	legal 828	civil 11.14
public 172	ecclesiastical 10.95	presidential 230	coercive 10.19	individual 812	due-process 10.81
civilian 170	statutory 10.93	white 211	explanatory 10.14	political 699	intellectual-property 10.73
national 139	papal 10.44	social 196	investigatory 10.06	natural 414	God-given 10.72
religious 131	patriarchal 10.39	spiritual 193	dictatorial 9.86	paternal 375	constitutional 9.91
constitutional 130	discretionary 9.94	federal 188	salvific 9.82	reproductive 258	human 9.70

(continued)

Adjectives for Authority/Power/Right

Authority		*Power*		*Right*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
parental 95	lawful 9.94	personal 180	monarchical 9.69	national 224	derived 9.47
legislative 86	taxing 9.92	soft 172	predictive 9.46	inalienable 207	reproductive 9.10
statutory 83	supervisory 9.84	national 160	redemptive 9.56	economic 185	associational 8.98
decision-making 77	paternal 9.76	supernatural 160	supernatural 9.44	democratic 134	paternal 8.78
legitimate 76	regulatory 9.62	predictive 139	monopolistic 9.42	moral 135	gay 8.55
governmental 73	moral 9.60	public 138	law-making 9.35	divine 132	vested 8.41
ecclesiastical 69	decision-making 9.49	coercive 136	superhuman 9.28	sovereign 125	sovereign 8.33
judicial 64	scriptural 9.46	explanatory 131	God-like 9.17	collective 114	equal 8.22
governing 63	governing 9.32	decision-making 127	discretionary 9.15	religious 111	contractual 8.11

Infinitives for Authority/Power/Right

Authority		*Power*		*Right*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
make 139	regulate 10.97	make 384	regulate 9.99	vote 700	secede 10.42
regulate 117	detain 10.74	regulate 147	coerce 9.43	know 698	procreate 10.02

(continued)

Infinitives for Authority/Power/Right					
Authority		*Power*		*Right*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
use 63	appoint 9.62	change 138	detain 9.42	choose 645	unionize 10.01
issue 55	compel 9.61	get 105	appoint 9.41	make 403	cross-examine 9.66
enforce 47	enforce 9.51	control 103	compel 9.36	say 397	edit 9.41
act 45	override 9.49	create 102	legislate 9.30	use 292	pollute 8.64
decide 45	enact 9.20	keep 96	enact 9.04	take 266	sue 8.22
order 45	impose 8.98	enforce 84	enforce 9.04	go 243	choose 8.15
take 44	negotiate 8.73	decide 83	declare 8.47	die 217	terminate 8.01
impose 40	intervene 8.58	help 81	authorize 8.44	speak 206	intervene 7.87
negotiate 40	implement 8.12	destroy 71	override 8.29	live 203	refuse 7.79
set 39	declare 8.07	stop 71	impose 8.28	sue 200	retaliate 7.73
go 37	govern 8.06	bring 67	heal 7.96	bear 183	vote 7.62
speak 35	investigate 7.85	determine 66	detect 7.95	ask 182	shorten 7.57
protect 35	levy 7.83	affect 65	transform 7.84	keep 179	criticize 7.55
determine 34	interpret 7.32	protect 63	suspend 7.68	expect 172	exclude 7.39
stop 29	decide 7.01	impose 61	prohibit 7.67	exist 161	petition 7.34
conduct 27	oversee 6.47	prevent 61	destroy 7.65	decide 153	inherit 7.27

(continued)

Infinitives for Authority/Power/Right					
Authority		*Power*		*Right*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
investigate 27	arrest 6.14	influence 60	govern 7.61	own 148	regulate 7.25
implement 26	protect 5.93	move 59	veto 7.46	work 144	appoint 7.24

Adjectives for Duty/Obligation/Responsibility					
Duty		*Obligation*		*Responsibility*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
active 798	wifely 14.18	moral 448	contractual 13.92	personal 828	fiduciary 12.37
civic 175	fiduciary 14.04	legal 238	filial 13.05	social 610	fiscal 10.40
moral 130	patriotic 11.47	financial 117	fiduciary 11.97	moral 289	care-giving 10.02
constitutional 114	filial 11.23	ethical 111	reciprocal 11.68	fiscal 265	civic 9.89
fiduciary 111	active 11.07	international 104	moral 10.94	individual 264	supervisory 9.81
official 111	civic 10.79	contractual 98	ethical 10.61	professional 212	parental 9.52
military 107	sworn 10.55	social 96	familial 10.33	financial 181	familial 9.22
patriotic 95	onerous 10.53	religious 69	statutory 10.28	civic 164	personal 8.96
administrative 89	solemn 10.17	constitutional 54	solemn 10.26	corporate 146	ethical 8.81
religious 89	statutory 9.63	professional 52	legal 9.39	parental 130	administrative 8.71

(continued)

Adjectives for Duty/Obligation/Responsibility

Duty		*Obligation*		*Responsibility*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
sacred 69	clerical 9.62	mutual 47	binding 9.19	legal 117	moral 8.68
legal 64	administrative 9.49	reciprocal 38	constitutional 9.08	ethical 104	managerial 8.53
public 64	ceremonial 9.40	military 33	mutual 9.01	environmental 99	solemn 8.45
domestic 47	constitutional 9.34	civic 25	civic 8.80	public 97	collective 8.40
ethical 44	familial 9.17	political 25	financial 8.23	administrative 91	pastoral 8.18
professional 41	sacred 9.10	personal 22	sacred 8.13	collective 86	constitutional 8.07
Christian 34	pastoral 9.01	filial 20	regulatory 7.71	constitutional 82	reciprocal 8.07
social 34	corresponding 8.89	national 19	religious 7.51	political 73	corporate 8.02
solemn 28	ethical 8.44	sacred 19	parental 7.41	fiduciary 63	statutory 7.88
wifely 25	moral 8.35	statutory 17	international 7.34	federal 50	social 7.53

Infinitives for Duty/Obligation/Responsibility

Duty		*Obligation*		*Responsibility*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
protect 98	abate 10.27	provide 76	obey 9.16	make 136	uphold 9.12
provide 46	obey 9.21	help 71	prosecute 9.03	protect 121	oversea 8.84
warn 46	disclose 8.48	protect 70	comply 8.81	help 87	educate 8.72

(continued)

Infinitives for Duty/Obligation/Responsibility					
Duty		*Obligation*		*Responsibility*	
By Frequency	By MI Score	By Frequency	By MI Score	By Frequency	By MI Score
help 44	prosecute 8.42	make 62	compensate 8.40	provide 78	protect 8.28
report 42	uphold 8.24	give 46	educate 8.01	ensure 60	ensure 8.27
take 41	warn 7.99	tell 46	inform 7.87	take 60	inform 7.83
make 34	protect 7.74	serve 41	protect 7.65	keep 49	assist 7.05
preserve 30	preserve 7.61	take 40	update 7.57	get 47	maintain 6.84
act 24	inform 6.98	pay 34	defend 7.41	see 38	resolve 6.69
speak 23	to ensure 6.83	keep 32	assist 7.33	give 33	preserve 6.69
ensure 22	defend 6.75	support 28	preserve 6.96	maintain 30	contribute 6.58
go 22	assist 6.27	try 27	serve 6.71	act 26	defend 6.51
keep 22	investigate 6.16	go 26	provide 6.63	tell 26	provide 6.51
obey 21	provide 5.07	report 25	maintain 6.42	look 24	teach 6.35
defend 20	perform 4.99	work 23	ensure 6.34	teach 23	fix 6.04
serve 20	maintain 4.93	share 22	accept 5.96	educate 22	monitor 5.98
disclose 19	prevent 4.92	act 21	seek 5.86	go 21	decide 5.95
tell 19	report 4.76	defend 20	teach 5.79	care 20	prevent 5.66
inform 18	act 4.72	maintain 20	respond 5.51	say 20	respond 5.61
see 18	serve 4.46	care 19	explain 5.42	find 19	serve 5.44

* Eight adjectives such as absolute, basic, certain, high/higher had the frequency or MI score to make the list but were excluded because they do not indicate an attribute that can help differentiate the nouns.

APPENDIX II: The Most Common Modifiers by Semantic Groups

Adjectives for Authority/Power/Right							
Civil Social	**Constitutional Legal**	**Convening Governmental (official)**	**Economic Political**	**Ethnic National**	**Individual Natural**	**Moral Military Religious**	**Other**
civil	constitutional	convening	political	American	gay	divine	associational
civilian	contractual	fast-tracking	economic	black	human	ecclesiastical	bragging
collective	delegated	federal	monopolistic	national	in/unalienable	God-given	coercive
public	derived	governing	soft (political)	supranational	individual	God-like	curative
social	due-process	governmental		white	natural	military	decision-making
	free-speech	investigatory			parental	moral	democratic
	intellectual-property	monarchical			paternal	papal	diacritical
	judicial	presidential			patriarchal	redemptive	dictatorial
	lawful	provisional			personal	religious	discretionary
	law-making	regulatory			reproductive	salvific	equal
	legal	self-governing			superhuman	scriptural	explanatory
	legislative	sovereign				spiritual	healing
	legitimate	supervisory				supernatural	predictive
	private-property	taxing					recuperative

(continued)

Adjectives for Authority/Power/Right

Civil Social	Constitutional Legal	Convening Governmental (official)	Economic Political	Ethnic National	Individual Natural	Moral Military Religious	Other
	sovereign statutory subject-constituting	vested					transformative

Infinitives for Authority/Power/Right

Affect Coerce	Appoint (other official acts)	Ask (for) Speak	Change Create Stop	Choose Decide Vote	Help Keep Protect	Living (other personal acts)	Other
affect	appoint	ask	change	choose	help	die	act
coerce	arrest	criticize	create	decide	keep	exist	bear (arms)
compel	authorize	expect	destroy	detect	heal	inherit	bring
control	crossexam	get	edit	determine	protect	live	conduct
impose	declare	petition	improve	exclude		own	go
influence	detain	refuse	move	interpret		procreate	implement
intervene	enact	say	prevent	know		unionize	overuse
	enforce	speak	prohibit	make (decision ...)		work	retaliate
	govern	sue	pollute	negotiate			set (something)
	investigate		shorten	secede			take (action ...)

(continued)

Infinitives for Authority/Power/Right							
Affect Coerce	**Appoint (other official acts)**	**Ask (for) Speak**	**Change Create Stop**	**Choose Decide Vote**	**Help Keep Protect**	**Living (other personal acts)**	**Other**
	issue levy legislate order override oversee regulate veto		stop suspend terminate transform	vote			use

Adjectives for Duty/Obligation/Responsibility							
Administrative Professional	**Civic Individual Social**	**Constitutional Legal**	**Corporate Financial**	**Ethical Military Religious**	**Familial Filial**	**Mutual Reciprocal**	**Onerous Sacred**
administrative ceremonial managerial official professional regulatory supervisory	civic collective individual international national personal public social	binding constitutional contractual fiduciary legal statutory sworn	corporate environmental federal financial fiscal political	ethical Christian clerical military/active moral pastoral religious	domestic care-giving familial filial parental wifely (fatherly) (motherly)	corresponding mutual reciprocal	onerous patriotic sacred solemn

(continued)

Infinitives for Duty/Obligation/Responsibility						
Accept Comply Obey	**Assist Care Help**	**Defend Ensure Maintain**	**Disclose Inform Report**	**Find Get**	**Prosecute (other official acts)**	**Other**
accept	assist	defend	disclose	find	investigate	abate
comply	care	ensure	explain	get	monitor	act
obey	compensate	keep	inform	seek	oversee	decide
	contribute	make (sure ...)	report		prosecute	go
	educate	maintain	respond			perform
	fix	preserve	say			prevent
	give	protect	speak			resolve (issues)
	help	see (that ...)	tell			try
	look (after ...)	uphold	update			work
	pay		warn			
	provide					
	serve					
	share					
	support					
	take (care ...)					
	teach					

APPENDIX III: Forced-Choice Study Question

(**Note:** The number after each noun=number of subjects who selected it; the underlined noun=the one used by the original speaker/writer in COCA; the boldfaced noun=the one with the highest onomasiological salience in the collocation in COCA.)

1. Here we are debating whether Congress or the President has the _____ to declare war.
   A. authority (26) B. right (6) C. **power** (10)
2. It is the _____ of the government to protect the people in this country.
   A. duty (23) B. obligation (2) C. **responsibility** (17)
3. They firmly believe it is the _____ of the government to deploy the police to bring more security for the Palestinians, who also don't feel safe anymore.
   A. duty (21) B. obligation (8) C. **responsibility** (13)
4. There's a reason the Founders of this country gave Congress the _____ to declare war. Such a commitment is borne not by an individual, but by the country.
   A. authority (16) B. right (1) C. **power** (25)
5. Should there be a special _____ of the government to take care of the old and sick veterans?
   A. duty (9) B. obligation (20) C. **responsibility** (11)
   (No selection: 2)
6. Article 1, section 8 of the Constitution says Congress has the _____ to declare war.
   A. authority (12) B. right (10) C. **power** (20)
7. This group saw it as their special religious _____ to carry out holy war, jihad, leaving others to pray and study the Koran.
   A. **duty** (28) B. obligation (12) C. responsibility (2)
8. But, since the United States and United Nations agree that any country harboring terrorists is an enemy, as soon as Israel is attacked by forces in Palestine, it has the _____ to declare war on Palestine, go in to get the terrorists, and destroy Palestine altogether.
   A. authority (11) B. right (28) C. **power** (3)
9. They [a religious group] have said that it's their religious _____ to kill those they consider to be their enemies.
   A. **duty** (25) B. obligation (17) C. responsibility (0)
10. The group is trying to help initiate a new constitutional amendment that gives voters the _____ to vote for "None of the Above."
    A. authority (0) B. **right** (32) C. power (10)

11. Our ancestors struggled and died to give us the _____ to vote. Let's not let them down so our voices are heard.
    A. authority (0) B. **right** (40) C. power (2)
12. The Catholic Church's leadership played an important role in the promotion of a religious _____ to protect the Columbia River watershed as an international basin.
    A. **duty** (13) B. obligation (14) C. responsibility (15)
13. It is the 1954 Supreme Court decision to outlaw racial supremacy. It basically said that all Americans should have the _____ to vote
    A. authority (0) B. **right** (42) C. power (0)
14. For Indian parents like Gian Singla, who's been in America for over 20 years, introducing his daughter to a mate is still a parental _____.
    A. duty (11) B. obligation (6) C. **responsibility** (25)
15. We're not changing anything as regards to Congress' _____ to vote up or down a trade agreement.
    A. authority (19) B. **right** (10) C. power (13)
16. It's my motherly _____ to be out here and try and make sure that this gun shop is relocated.
    A. **duty** (32) B. obligation (1) C. responsibility (9)
17. [The following is a statement made by a woman when discussing the fact that her ex-husband had not provided much financial support for their children:] "If he's willing to fulfill his fatherly _____ now, let him."
    A. **duty(ies)** (26) B. obligation(s) (8) C. responsibility(ies) (8)
18. (The speaker was a spokesperson for a county's law enforcement offices:) "We wouldn't want to surrender our _____ to arrest and prosecute those who break the law."
    A. **authority** (29) B. right (8) C. power (5)
19. He believes he has a civic _____ to promote recycling.
    A. **duty** (36) B. obligation (1) C. responsibility (5)
20. As the sheriff sees it, the state law gives him the _____ to arrest the migrants, too, as coconspirators.
    A. **authority** (23) B. right (14) C. power (5)
21. There's a civic _____ to sit on a jury.
    A. **duty** (30) B. obligation (8) C. responsibility (4)
22. The FBI was looking for them but had no _____ to arrest them because they hadn't done anything illegal at the time.
    A. **authority** (18) B. right (17) C. power (7)
23. If these people had full automatic weapons like M-16s or AK-47s, then obviously the police are well within their _____ to arrest them.
    A. **authority** (13) B. right (25) C. power (4)
24. We all have a civic _____ to participate in neighborhood efforts to make

positive change in our quality of life.

A. **duty** (31) B. obligation (1) C. responsibility (10)

25. He firmly believes university administrators should have the _____ to fire professors who are incompetent or irresponsible.

A. authority (19) B. **right** (7) C. power (16)

26. It is my sad _____ to report this afternoon that my colleague, Tim Russert, moderator of "Meet the Press" and NBC's Washington bureau chief, collapsed and died early this afternoon.

A. **duty** (33) B. obligation (4) C. responsibility (5)

27. David Kaczynski [who reported on his Unabomber brother Ted Kaczynski] knew the risk when he chose social _____ over family loyalty.

A. duty (7) B. obligation (11) C. **responsibility** (24)

28. Under the city charter, the mayor does not have the _____ to fire the police chief.

A. authority (28) B. **right** (5) C. power (9)

29. The first case discussed in this column concerns a dispute between an Iowa county board of supervisors and the county board of health over who has the _____ to fire, hire, and promote environmental health personnel.

A. authority (30) B. **right** (7) C. power (5)

30. No one is suggesting that exercise clothes have become acceptable everyday attire, and no one is asking you to bare a lot of leg. For most of us, in fact, a good amount of coverage is a social _____.

A. duty (1) B. obligation (19) C. **responsibility** (20)

(No selection: 2)

31. Friedman famously argued in a 1970 New York Times Magazine article: "There is one and only one social _____ of business — to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engage in open and free competition without deception or fraud."

A. duty (3) B. obligation (23) C. **responsibility** (16)

32. Even though GE (the General Electric Company) owns only 44% of the stock of NBC (the National Broadcasting Company), GE has the sole _____ to fire the CEO of NBC.

A. authority (22) B. **right** (7) C. power (13)

Chapter 13

L2 vs. L1 Use of Synonymy: A Combined Corpus and Cognitive Linguistic Study of Synonym Use and Acquisition

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Important note: This chapter has incorporated some of the information that was placed on line by the journal *Applied Linguistics* when the article was published by the journal to save space. With the incorporated information, the article/chapter is much easier to understand and more informative.

INTRODUCTION AND THEORETICAL BACKGROUND

Synonymy

Synonymy or near-synonymy is a common and interesting linguistic feature.[1] While semantically overlapping, synonyms each have finely differentiated meanings and are "not fully intersubstitutable" (Edmonds & Hirst, 2002, p.107). As such, they are vital for precise and effective communication and simultaneously challenging for language users (Edmonds & Hirst, 2002; Hatch & Brown, 1995), especially for L2 learners (Martin, 1984). Synonyms, therefore, warrant special attention. Yet synonymy does not appear to have received its due attention in research until fairly recently when advancements in cognitive and corpus linguistics have made it possible to more accurately and effectively identify the semantic and usage patterns of synonyms (Arppe, 2002, 2008; Divjak & Gries, 2006; Gries, 2001; Gries & Otani, 2010; Hanks, 1996; Liu, 2010, 2013; Liu & Espino, 2012).

Using corpus and/or experimental data, these studies have provided convincing evidence for the Firth/Halliday/Sinclair lexical semantic theory that the meaning of a lexical item is largely determined by its collocates and other contextual features (Firth, 1957; Halliday, 1966; Sinclair, 1966, 1991),

a theory that led to breakthroughs in synonym research. One of the first studies in this regard was Miller & Charles (1991). In their study, native English speakers rated the degree of similarity between words in pairs and estimated the contextual similarity of words embedded in sentences (contexts) taken from corpus data. The results showed that "the more often two words can be substituted into the same contexts the more similar in meaning they are judged to be" (Miller & Charles, 1991, p.1). Similarly, Church, et al. (1994, p.169) in their corpus study of the synonyms ask for, request, and demand yielded the same finding: lexical items' "textual substitutability" is a good indicator of their semantic similarity.

These studies have later led to an effective corpus-based approach to the study of lexical semantics: the behavioral profile (BP) approach. This approach examines lexical semantics by focusing on the morphosyntactic, syntactic, and semantic distributional patterns (especially the collocates) of lexical items and by using powerful statistical procedures such as hierarchical agglomerative clustering and multivariate procedures like logistic regression (Arppe, 2008, 2009; Arppe & Järvikivi, 2007; Divjak, 2010; Divjak & Arppe, 2013; Divjak & Gries, 2006; Hanks, 1996). Such an analysis can clearly reveal the subtle semantic differences among synonyms. So far there have been quite a few corpus-based BP studies on synonymous verbs (e.g., Hanks, 1996; Divjak & Gries, 2006; Arppe, 2008) and adjectives (Gries, 2001; Gries & Otani, 2010; Liu, 2010). These studies have all yielded a clear internal semantic structure of the synonym set they each examined.

Recently, to enhance research reliability, a few synonym studies have combined corpus analysis with experimental designs in which participants were asked to do synonym similarity judgments and/or make forced choices, that is, to select a word from a set of provided synonyms to fill in the missing word in a sentence (Arppe & Järvikivi, 2007; Liu, 2013). In Liu's (2013) study of two sets of synonymous nouns, the subjects were also asked to explain the rationales for their synonym choices, offering information that is very important for understanding synonym use but cannot be obtained from a corpus. Through a close analysis of corpus and elicited data, Liu identified two determining factors in synonym selections: (i) salience, that is, salient usages of synonyms; and (ii) the speaker/writer's construal of the communication context/goal. Salient usages are those collocations of the synonyms that boast the highest frequency compared with their alternative counterparts. According to Grondelaers & Geeraerts

(2003), the salience of a lexical item/usage or its conditional probability in context is measured by computing the ratio of the times it is used to refer to a concept/referent to the total corpus frequency of the occurrences of all the terms used for the same concept.[2]

As an example related to the synonym set *authority/power/right*, in Davies's (2008–) Corpus of Contemporary American English (COCA), there were 700 tokens of *right to vote*, seven tokens of *power to vote*, and one token of *authority to vote*. Calculated using the aforementioned method, *right to vote* boasts a salience of 99 percent (700/708), *power to vote* 0.9 percent (7/708), and *authority to vote* 0.1 percent (1/708). It is important to note that salient usages are not arbitrary but result from the primary or salient meanings of synonyms. We usually say *right to vote* because voting is generally considered a birthright ensured by constitution, not something granted by one's position/office, as *authority/power* are. Similarly, of the *incorrectly/erroneously/mistakenly/wrongly accused/convicted* set of synonymous adverbs, *wrongly accused/convicted* claims a very high salience of 96 percent because only wrongly has the meaning of "unjustly" needed in the context. Thus, the grasp of salient usages entails a good understanding of the overlapping but simultaneously different semantic networks of the synonyms in a set — the understanding of not only in what meanings the synonyms overlap and how strongly they overlap but also in what meanings they differ. Take *authority/power/right* for example. While the synonyms share the meaning of "power/prerogative," the extent of their sharing varies, especially in the case of *right*, whose "power/prerogative" derives largely from birth/justice. Equally importantly, the three words each have a meaning or meanings not shared by the other two. For instance, *power* has the meaning of "energy/force," not shared by authority/right, for we can say *coal/wind power*, but not **coal/wind authority/right*. In this particular meaning, *authority/right* are not really synonyms of *power*.

The second key factor, construal (the process by which a speaker chooses a given view and expression in a given context) plays a crucial role in language use (Croft & Cruse, 2004; Langacker, 2008). This is especially the case with the use of synonyms because a speaker/writer often has to decide which synonym in a set is most prototypical semantically in conveying the concept at hand (Arppe, 2008; Liu, 2013). This can be seen in the two following examples reported by Liu (2013).

The first example concerns the use of the synonyms *authority/power/right* related to the issue of voting. As reported above, while *right to vote*

has by far the highest salience in COCA, there are eight tokens of *power/authority to vote*. These non-salient tokens deserve our special attention, though, because obviously the speaker/writer in each of these cases construed voting as an issue of *power* or *authority* rather than *right*, as shown in the following quote from a letter to the editor of the magazine *Ebony* urging Afro-Americans to vote: "Our ancestors struggled and died to give us *the power to vote*. Let's not let them down. Vote!!" Clearly, the author of this letter construed voting more as a *power* than a *right*.

The second example is found in the debates regarding whether the US President or Congress had the *authority/right/power* to declare war during the 1991 and 2003 Iraq wars. All three nouns were used in the COCA data, but *power* has the highest salience (33 tokens) followed by *authority* (10) and then *right* (8). This is because semantically *power* and *authority* are more appropriate choices because the issue in question was to which of the two government branches the Constitution had given the *power/authority* to declare war. The issue was not about *right* (justice or entitlement). Yet, obviously, some politicians and media personalities construed the declaration of war not just as an *authority/power* but also as a moral issue, as it concerned the destruction of human lives. These examples demonstrate that "a different word selection will achieve a different construal" (Holme, 2009, p.111). As Liu (2013, pp.95–96) finds, while speakers/writers often opt for the most salient synonym, sometimes their construal operations regarding the synonymous nouns in relation to what they want to convey may lead them to decide that the prototypical meaning of the most salient synonym "does not fit the concept being expressed" and choose instead "a less salient synonymous item whose prototypical meaning corresponds better to the concept in question," a finding also reported in Arppe (2008).

L2 Synonymy Acquisition

Despite the importance and difficulty of synonymy, there has not been much research on L2 learning of synonyms except for a couple of studies on errors in L2 synonym use (Laufer, 1991; Martin, 1984) and one on the use of corpus data to assist synonym learning (Yeh, *et al.*, 2007). Martin is the only one that directly examined the problems in L2 use of synonyms. Based on the examples of errors in synonym use made by advanced ESL learners, Martin explored and sorted the reasons, sources, and types of errors. According to her analysis, there are four major types or sources of error in L2 use of synonyms: "stylistic, syntactic, collocational,

and semantic" (Martin, 1984, p.130). Laufer's (1991) study on the lexical richness in the writing of advanced L2 learners (i.e., not a study specifically on synonym use) also found that even advanced learners show difficulties in the use of synonyms as they often use the same word to express the same concept repeatedly. Yeh, *et al.*'s (2007) study examined the effectiveness of the use of corpora (concordancing) in enhancing ESL learners' grasp of synonyms. Their results show that the use of corpora effectively assisted the learners in understanding the collocational patterns of the synonyms being studied, resulting in enhanced learning of the synonyms. However, there have not been any empirical studies investigating how L2 speakers actually use synonyms.

Against this backdrop, the present study aims to use a forced-choice question instrument, along with corpus data as reference, to examine L2 speakers' use of four sets of synonyms in comparison with native English speakers' use of them in order to answer the following two questions:

1. What usage patterns and differences can be found in L2/L1 synonymy use?
2. What is the developmental trajectory of L2 synonym acquisition? More specially, when do L2 learners develop a good command of the salient usages and finely-differentiated meanings of synonyms and the ability to adopt unique construals and selections called for by context?

METHODOLOGY

Participants

The participants of this study were 42 native English speakers and 66 Chinese learners of English. The native speakers were undergraduate and graduate students at a public university in the USA. The Chinese subjects consisted of two English proficiency levels: 40 intermediate and 26 advanced. The intermediate-level subjects were junior English majors at a public university in China. The advanced-level participants were Chinese graduate students studying in the USA, with 21 of them from the aforementioned US university and the remaining five from two other universities. The graduate students each had an *iBT* TOEFL score of at least 100 or 600 on the paper-version TOEFL (two equivalent scores that would rank them among the top 20 percent of TOEFL takers), and their length of stay in the USA ranged from 2 to 28 months with 73 percent (19) having stayed in the USA for only 3 months or less. Including two

different proficiency levels of nonnative speakers would help answer our research question on the trajectory (developmental pattern) of L2 synonym acquisition. No low-level learners were included because synonyms are too difficult for them, so they might resort heavily to random guessing in their answers. The reason that the intermediate and the advanced nonnative participants were not recruited from the same school was that, while few students at the Chinese university had taken the TOEFL and hardly any scored 100 or above, it was difficult to recruit an adequate number of intermediate Chinese students at the American university. It is also important to note that despite the graduate students' general short length of stay in the USA, having subjects from mixed contexts (i.e., EFL vs. ESL) might cause validity and/or reliability issues.

Instrument and Data Collection

The synonyms used are two sets of nouns (*authority/power/right*; *duty/obligation/responsibility*) and two sets of adverbs (*actually/genuinely/really/truly*; *erroneously/inaccurately/incorrectly/mistakenly/wrongly*). The reason for choosing nouns and adverbs is that whereas there have been quite a few studies on adjectives and verbs as mentioned above, there has been little research on English synonymous nouns and adverbs except for Janda & Solovyev (2009), Liu (2013) and Liu & Espino (2012). The instrument used (shown in the Appendix) was a forced-choice questionnaire that also asked the subjects to explain the rationales for their choices. It consisted of 24 questions with 6 on each synonym set. Each question contained a sentence/passage with a word/synonym deleted, along with a set of synonyms to choose from for filling in the blank. All the sentences were taken from COCA, with a few slightly modified for clarity and brevity. Each question in the instrument provided the key collocate(s) and other contextual information of the deleted synonym for the subjects to use in making their synonym selection. According to Liu's (2013) corpus analysis, the most informative contextual features for synonymous nouns are their collocating adjectives and adjectival infinitives. For example, we usually say *individual right* (not **individual authority*), but *regulatory authority/power* (not **regulatory right*); similarly, we typically say the *right to vote*, but the *authority/power to levy taxes*. Liu's analysis identified some general abstract semantic features of the modifiers that help distinguish the synonyms. For example, the modifiers for *right* are mainly individual/natural in nature, while the modifiers for *authority/power* are often official/

governing in nature (see Liu, 2013 for detailed information).

The most informative contextual features for adverbs, according to Liu & Espino (2012), are the adjectives/verbs they modify, for example, *wrongly accused/imprisoned* rather than *incorrectly/mistakenly accused/imprisoned*, and the sentential positions they frequently appear in, for example, *actually* often appearing in the sentence initially as a discourse marker to contradict/negate an earlier claim as shown in "*Actually*, I didn't say that." A subject familiar with the typical collocational information of a synonym should be able to correctly select it, unless he/she construes the communication purpose in the given context in a way that calls for a different synonym, resulting in a unique selection — a practice that, as mentioned above, was found in Arppe (2008) and Liu (2013) and which will be explored closely below.

It is important to note that previous research (Liu, 2013) has shown that, because of the closely related meanings of synonyms and the construal factor, native speakers do not always make the same synonym choice in a given context. Thus, when we compare L2 response patterns with native speakers', we use the choice made by the majority of the native speakers as the benchmark (in the data of this study and/or COCA) because the choice of the majority is usually the best for expressing the meaning in context.

When the instrument was given to the subjects, the questions on the same synonym set were randomly mixed to avoid any item sequencing effect, but they are listed consecutively in the appendix for easier reference. If a subject considered more than one synonym in a question appropriate, he/she had to clearly indicate a preference by ranking the synonyms with 1 being the first choice (the only choice counted in the data analysis), a stipulation meant to force the subject to make a choice. It is necessary to note that the native speakers' data in this study were from a larger study instrument that included the 24 questions in this study. Also, the results of the analysis of the native speakers' use of the two sets of nouns were part of those published in Liu (2013).

Concerning the corpus data used as reference, the native English speaker data came from the Spoken and Academic Writing sub-corpora of Davies's (2008–) COCA mentioned earlier; the nonnative speaker data were from Wen, Wang, & Liang (2005) Spoken and Written English Corpus of Chinese Learners (SWECCL). The basic information about the two corpora is provided in Table 1. COCA is used because of its contemporariness and representativeness (ensured by its large size and well-designed, systematic data selection); SWECCL is used because of

the fact that it is the largest Chinese English-learner corpus available and that its data are language produced by college students — the same type of Chinese English learners used in the forced-choice study. COCA and SWECCL differ substantially in size and also vary in genre, but this should not be a major concern because of the way the corpora were used and the analyses and comparisons were done in this study. First, in comparing and reporting the synonym frequencies and usage patterns between the two corpora, we used the "number of tokens per million words (PMWs)" norming method, an established and widely-used method employed to ensure the comparability of findings from corpora of unequal sizes. Second, the corpus data and results are used only as reference or secondary support for the forced-choice study and its findings. Additionally, the size of SWECCL is actually larger than most L2 learners corpora used in published research studies so far, as the learner corpora used in many existing studies were under one million words (e.g., Flowerdew, 2010; Laufer & Waldman, 2011); also, SWECCL has already been used in a few studies published in premier journals in applied linguistics (e.g., Lu, 2011, 2012). Still, caution should be exercised in interpreting the corpus comparison results referenced in this study.

Table 1: Information about COCA and SWECCL

		# of words (million)	Data source/type	Data time period
COCA*	Spoken	86.98	spoken media speech from various TV/radio programs	1990–2010
	Written	82.91	journal articles from 148 different academic journals	1990–2010
	Total	169.89		
SWECCL	Spoken	1.46	oral tests involving story retelling, monologues on a given topic, and dialogues	1996–2002
	Written	1.19	college English majors' compositions with the majority being argument essays	exact dates unknown (likely from late 1990s to early 2000s)
	Total	2.65		

* COCA also contains three other sub-corpora with a similar size each: Fiction, Magazine, and Newspaper.

DATA ANALYSIS, FINDINGS, AND DISCUSSION

To help uncover any general differences among the three groups' synonym selections, we first tabulated the three groups' responses to each question (results included in the Appendix) and conducted a 3 (group) by x number of synonym choice (depending on the number of choices in the given synonym set) Chi-square test of each question by using SPSS. The Chi-square test results (also reported in the Appendix, including the Chi-square values, significance levels, and effect sizes [Cramer's Vs]) revealed a significant difference among the three groups' choices on 20 items, with effect sizes on these items ranging from .233 (low medium) to .475 (close to large). Only four questions (no. 2, 3, 4, and 12) showed no significant difference. However, the results do not tell whether both the intermediate and the advanced nonnative groups, or just one, differed significantly from the native speaker group on each of the 20 questions. Therefore, using the native speakers' response patterns as the benchmark, we conducted a 2 (group) by x number of choices Chi-square test between the intermediate nonnative and the native groups and then between the advanced nonnative and the native groups. The results (also included in the Appendix) reveal that while the intermediate nonnative group's responses differed significantly from those of the native speakers on all of the 20 items (with effect sizes ranging from 0.273 to 0.717), the advanced nonnative group's differed significantly from the native speakers' on only 10 of them, a reduction by half. This suggests a closer approximation of the advanced group's response patterns to those of the native speakers, that is, a noticeable advancement in the nonnative speakers' synonym acquisition as their proficiency increased.

To understand the advancement trajectory in L2 synonym acquisition, we scrutinized and compared the three groups' synonym choices and rational explanations. The analysis reveals that 1) nonnative speakers began to show some grasp of the salient usages/meanings of synonyms at the intermediate level, but they still struggle with those salient usages without high raw frequency, and 2) it is not until at the advanced level that they begin to show some ability to adopt unique construals and usages required by unique contexts.

To help understand the results regarding the acquisition of salient usages, we have included in Table 2 the salience measures of the key

collocation usages of the synonyms tested in this study along with their mutual information (MI) scores, another important collocation measure to help more completely illustrate the salient usage patterns. Developed by Church & Hanks (1990), MI measures the probability of two lexical items co-occurring with the probability of the items occurring independently. While the salience and MI measures correlate significantly as evidenced by the fact that the most salient usage also boasts the highest MI in 8 of the 11 key synonym collocation sets, MI differs from the salience measure in that it favors or gives higher scores to those words that have a low total frequency but habitually co-occur, for example, in the *actually/genuinely/really/truly worried* sets, the most salient usage *really worried* does not have the highest MI, but *genuinely worried* does because *genuinely* has a much lower frequency than really. The two measures complement each other in ensuring the reliability of the salience.

Table 2: Degrees of salience and MI scores of key noun/adverb collocations in COCA[a]

Collocation Part/Clue	Salience (in parentheses)/MI Score (in brackets)
civic-	***-duty*** (175/364=48%)/[10.79]
	-responsibility (164/364=45%)/[9.89]
	-obligation (25/364=7%)/[8.80]
fatherly/motherly-[b]	***-duty*** (11/13=85%)/[14.38]
	-obligation (1/13=7.5%)/[7.51]
	-responsibility (1/13=7.5%)/[5.12]
religious-	***religious-duty*** (89/170=52%)/[7.85]
	-obligation (69/170=41%)/[7.51]
	-responsibility (12/170=7%)/[2.89]
sad-	***-duty*** (16/17=94%)/[6.71]
	-obligation (0/17=0%)/[N/A with-no-occurrence]
	-responsibility (1/17=6%)/[1.16]
social-	***-responsibility*** (610/740=82%)/[7.53]
	-obligation (96/740=13%)/[6.31]
	-duty (34/740=5%)/[3.14]
-to arrest	***authority-*** (22/45=49%)/[6.14]
	power- (13/45=29%)/[5.10]
	right- (10/45=22%)/[3.04]
-to declare war	***power-*** (33/51=65%)/[8.71]
	authority- (10/51=19%)/[9.27]
	right- (8/51=16%)/[4.57]

(continued)

Collocation Part/Clue	Salience (in parentheses)/MI Score (in brackets)
-to fire (people)	***right-*** (29/59=49%)/3.63]
	power- (22/59=37%)/[5.37]
	authority- (8/59=14%)/[6.15]
-to vote	***right-*** (700/708=99%)/[7.62]
	power- (7/708=<1%)/[1.93]
	authority- (1/708=<1%)/[0.52]
-worried	***really-*** (373/423=88%)/[6.76]
	genuinely- (18/423=4.3%)/[8.83]
	actually- (16/423=3.8%)/[3.52]
	truly worried (16/423=3.8%)/[5.92]
-accused/convicted	***wrongly-*** (230/240=95.8%)/[15.45]
	mistakenly- (6/240=2.5%)/[10.52]
	incorrectly (3/240=1.3%)/[10.23]
	erroneously- (1/240=0.4%)/[10.22]
	inaccurately-(0/240=0)/[N/A with-no-occurrence]

[a] All of the synonymous noun items were reported in Author (2013, p.86).
[b] These collocation parts were combined due to their closely-related meaning.

It is necessary to note that whereas in many of the listed items there is a highly salient usage with a salience above 80 percent (e.g., *religious/sad duty and right to vote*), in some items there is no usage claiming a salience above 50 percent (e.g., *civic duty/obligation/responsibility*, *authority/right/power to arrest*, and *right to fire employees*). In other words, there is no clear dominant usage, which means the synonyms involved in these items are much closer in meaning and much more interchangeable than those in the items where there is a highly salient usage. The native speakers' choices generally reflect this pattern. For example, in Question 4 (*authority/right/power to fire*), none of the three usages/choices was selected by more than 50 percent of the subjects including the EFL learners (hence, no significant difference). Also, although the *authority/right/power to arrest* and *civic duty/obligation/responsibility* questions (no. 1 and no. 8) each show one choice selected by a majority of the native speakers, there are special reasons for such unique results. In Question 1 concerning whether the police had "the *authority*, *right*, or *power to arrest* individuals who carry fully automatic weapons," the question used the phrase "within their _____ to arrest," some of the native speakers chose *right to arrest* and mentioned the phrase *within their right to* as a conventional usage. Concerning Question 8 on *civic duty/*

obligation/responsibility, an overwhelming majority of native speakers selected civic duty because many considered it a conventional usage, something supported by the fact that it boasted both the highest salience measure and MI score.

As noted earlier, the salient usages are not arbitrary but tied to (or result from) the primary or salient meanings of synonyms. However, the finely differentiated salient meanings are often difficult even for native speakers to articulate, for the native speakers were often unable to mention these semantic nuances as rationales for choosing the salient usages; instead, they mentioned conventional usages as their rationales: "*This is what I often hear people say*;" "*idiomatic usage*;" "*common/most common/set phrase/collocation*;" "*It sounds the best/right (when I read it aloud)*;" and "*one unit/a chunk*." For example, 22 of the 36 (61 percent) native English speakers who chose *duty* (i.e., *civic duty*) in Question 8 mentioned the phrase being a common/set usage as the reason for their choice. Fifteen of the 32 (47 percent) who selected *right to vote* over *authority/power to vote* in Question 3 said they made their choice because they believed *right to vote* to be a set/idiomatic usage. Nine of the 32 (28 percent) who selected *wrongly* for *wrongly convicted* in Question 19 listed convention as the reason for their choice.

Salient Usage: First Acquisition Phase and Effect of Frequency

The nonnative speakers' grasp of some salient meanings/usages of synonyms at the intermediate level is evidenced by the fact that the majority of them chose the most salient usages with high overall frequencies, for example, *right to vote* (Questions 3 and 5) and *social responsibility* (Question 12, though the majority of the native speakers did not choose the salient option because of a unique construal, a point that will be discussed below). The nonnative speakers' grasp of such salient usages is also shown by the fact that some of the EFL/ESL subjects, mostly the advanced ones, also mentioned conventional usage as a motivation for their selections. This is significant considering that 15 (38 percent) of the intermediate and 6 (23 percent) of the advanced nonnative speakers did not provide any explanation and that many of the explanations given were brief, involving phrases like "just by feeling" and "guessing." Some examples of the role of conventional usage in the advanced nonnative speakers' decisions include the following: 14 (54 percent) mentioned conventional usage as the rationale for their choices of *really*, *really* in

Question 16 (most of these subjects also did so in Question 18, although it was not the best/right choice). Seven (27 percent) in Questions 3 and 5 mentioned conventional usage for choosing *right* for right to vote; six (23 percent) did so in Question 13 for choosing *actually* as a sentence initial disjunct and also in Question 24 for choosing *incorrectly* for *answers incorrectly*; two (7 percent) did so in Question 19 for selecting *wrongly* for *wrongly convicted* (both stated their reason as having heard *wrongly* in the same context). It is clear from the above examples that salient usage plays a very important role in synonym acquisition.

Yet, while most of the nonnative speakers selected the salient usages with high raw frequency, they (including most advanced learners) did not select those salient usages without a high raw frequency (*fatherly/motherly/religious/sad duty* in Questions 7–11 and *wrongly accused/convicted/suspected* in Questions 19, 21, and 23). This finding indicates that most nonnative speakers still have difficulty using these salient usages.[3] The finding also shows the importance of the overall frequency of a usage in affecting EFL/ESL learners' ability to use it. This frequency effect can be further seen in the response differences between the intermediate and advanced EFL/ESL learners. While both the intermediate and advanced nonnative subjects were unable to choose the conventional/salient usages composed of low-frequency lexical items, for example, (*wrongly*) *convicted/accused/suspected* in Questions 19, 21, and 23, only the intermediate nonnative subjects still showed some difficulty using a few conventional usages composed of higher-frequency lexical items like (*incorrectly*) *identified* and *answered* in Questions 20 and 24 (in COCA, the words *identify/answer* each boast a frequency more than twice that of *convict/accuse/suspect* each). More importantly, *wrongly accused/convicted/suspected* are especially infrequent in English — the main type of English input that EFL/ESL students are exposed to. For example, of the 237 combined total tokens of *wrongly accused/convicted/suspected* in COCA, only 13 (5 percent) occurred in academic writing. Most of the tokens were found in the newspaper, magazine, and spoken registers — the types of English which most college EFL students have little access to. Thus, the nonnative students' lack of exposure to the usage of wrongly in the sense of *unjustly* must have contributed to their difficulty with the adverb in this sense.

These results suggest that L2 learners generally first grasp the most salient member(s) in a synonym set with a high raw frequency (when

such members exist) and the most common usages, for example, *right* (in *right to vote*) in the *authority/power/right* noun set and *really* (in *really, really*) in the *actually/genuinely/really/truly* adverb set. The *erroneously-wrongly* set contains no such members as all the adverbs in the set show a similar low frequency (see Table 3). The SWECCL data also support this finding, for a comparison of the use of the four synonym set in SWECCL with that in COCA (results reported in Table 4 and Table 5) reveals that while the Chinese EFL learners' (especially the advanced learners') usage patterns of the most frequent/dominant synonyms in their respective sets (e.g., right, responsibility, and really) display some approximation to native speakers', their usage patterns of the infrequent ones show little or no approximation.

To understand this point, let us look at the results in Table 4 and then Table 5 (below) closely. Concerning the comparison results about synonymous nouns reported in Table 4, we need to first recall that the typical modifying adjective/infinitive collocates of a noun are most revealing about the meanings/functions of the noun. Examining the use of such collocates can effectively uncover speakers/writers' grasp/use of a noun. Table 4 shows the top eight most frequent adjectives/infinitives of the nouns in the two noun sets in each corpus. The modifiers are listed in order of their frequency. The reason for listing only the top eight modifiers is twofold: 1) the number of the modifying collocates for most of the synonyms in SWECCL is fewer than eight, and 2) eight modifiers are enough to offer some valuable information about the meanings/uses of the synonymous nouns. The results in this table (Table 4) show that while most of the adjectives/infinitives used by the Chinese EFL learners differ from those used by the native English speakers, a few do overlap (i.e., a few were used by both Chinese EFL learners and native speakers). More importantly, the overlapping ones are mainly those used to modify the most dominant/frequent synonyms in each set (*right* and *responsibility*). This finding suggests some approximation of the Chinese EFL learners' usage patterns of the most dominant/frequent synonymous nouns to those of the native speakers.

To understand the results in Table 5, we should recall that the typical adjectives/verbs modified by an adverb are usually the most revealing collocates about the meanings/functions of the adverb. Yet, no adjectives are reported here because the adverbs in the *erroneously-wrongly* set were not found to be used to modify adjectives at all. Also, only the top eight most

Table 3: Frequency of the synonyms (PMWs) in COCA

Authority		*Power*		***Right****					
Spoken	Written	Spoken	Written	Spoken	Written				
36.14	69.82	159.96	292.76	263.05	379.24				
Duty		*Obligation*		***Responsibility***					
Spoken	Written	Spoken	Written	Spoken	Written				
36.14	69.82	24.09	54.42	100.74	167.45				
Actually		*Genuinely*		***Really***		*Truly*			
Spoken	Written	Spoken	Written	Spoken	Written	Spoken	Written		
635.58	145.07	5.88	9.34	1655.73	135.70	43.30	51.26		
Erroneously		*Inaccurately*		*Incorrectly*		*Mistakenly*		*Wrongly*	
Spoken	Written	Spoken	Written	Spoken	Written	Spoken	Written	Spoken	Written
0.37	2.11	0.26	1.08	1.23	4.64	1.94	3.49	3.13	3.60

* Words in bold (i.e., right, responsibility, and really) are each the most frequent/dominant synonyms in their respective sets. No dominant member is marked for the erroneously-wrongly adverb set, because all the adverbs in the set show a very similar low frequency, and the frequency differences among them are truly minuscule. For example, incorrectly has the highest frequency (in writing) — 4.64 tokens per million words (PMWs), but this frequency is merely 1 token higher than the frequencies of wrongly and mistakenly.

Table 4: The most frequent adjective/infinitive collocates of the synonymous nouns in COCA and SWECCL: A comparison

Corpus	Adjectives before the nouns					
	authority	*power*	*right*	*duty*	*obligation*	*responsibility*
COCA	moral, political, legal, civil, regulatory, military, governmental, *convening*[*]	political, military, **economic**[**], American, black, **white**, public, governmental	**human**, civil, constitutional, gay, **equal**, individual, political, **natural**	civic, moral, constitutional, official, military, patriotic, religious, *sad*, *onerous*	moral, legal, financial, ethical, international, contractual, *reciprocal*, *mutual*	personal, social moral, fiscal, individual, **individual**, professional, financial
SWECCL	school, absolute, parent	magic, competitive, great, will, **white**, natural, strong, **economic**	**equal**, **human**, same, children, certain, citizen, legal, **natural**	main, absolute, major	unchangeable, parent	family, main, **individual**, active, main, full
	Infinitive verbs after the nouns					
	authority to	*power to*	*right to*	*duty to*	*obligation to*	*responsibility to*
COCA	make, regulate, issue, use, enforce, order, *appoint*, *detain*	make, regulate, **change**, get, control, enforce, *detain*, *appoint*	vote, **know**, **choose**, make, say, use, take, go	protect, provide, warn, help, report, **make**, *obey*, *disclose*	provide, help, protect, make, give, tell, *obey*, *comply*	make, **protect**, **help**, provide, ensure, keep, get, see
SWECCL	do, lead,	accomplish, advance, **change**, learn, overcome	**know**, **choose**, do, be, decide	clean, **make**, do, study, put	educate, impart, know, learn, pull	**help**, tell, **protect**, improve, learn

[*] Words in italics were not among the top eight modifiers but were included at the end of their respective lists because they were very revealing about the unique meanings of the synonyms they modify (Author, 2013).

[**] Words in bold are those that have made the list in both COCA and SWECCL.

Table 5: The most frequent verbs modified by the synonymous adverbs

Corpus	*Actually*	*Genuinely*	*Really*	*Truly*	
COCA	**Have**[*], go, **do**, get, see, **make**, happen, say	believe, want, like, commit, try, care, love, feel	**want**, **think**, **have**, **know**, **need**, **do**, get, go	believe, **understand**, **love**, want, **feel**, appreciate, know, enjoy	
SWECCL	speak, need, take, **do**, give, **have**, **make**	(None)	**want**, **have**, **think**, **need**, **do**, make, mean, **know**	express, **feel**, **love**, reflect, seem, show, trust, **understand**	
	Erroneously	*Inaccurately*	*Incorrectly*	*Mistakenly*	*Wrongly*
COCA	believe, assume, think, describe, call, report, state, attribute	report, describe, draw, call, represent, suggest, quote, attribute	identify, report, state, say, describe, assume, list, answer	think, believe, identify, assume, call, say, send, attribute	accuse, convict, decide, imprison, assume, identify, attribute, deny
SWECCL	(None)	(None)	use	(None)	check, write, associate, answer, consider, respond

[*] Verbs in bold are used in both corpora.

frequent verbs modified by each adverb are listed in the table, although there are quite a few cases (all adverbs of low frequency) in SWECCL where there are fewer than eight (sometimes zero) collocating verbs found for each of them. More importantly, many of the collocating verbs of the adverbs used by the Chinese EFL learners differ from those used by the native English speakers. And all of those that did appear in both corpora are those used with those frequent adverbs, e.g., *really*, *actually*, and *truly* (all three each boast a frequency of 50 tokens PMWs). Concerning the low-frequency adverbs (each with a frequency fewer than 10 tokens PMWs),

either none of the verbs used by the Chinese EFL learners was used by the native speakers or vice versa (as in the case of *wrongly* and *incorrectly*), or no verbs were used with the adverbs at all by the Chinese EFL learners (as in the case of *genuinely*, *erroneously*, *inaccurately*, and *mistakenly*). These findings again indicate the importance of frequency in L2 learners' acquisition of synonyms.

In short, the findings from both the elicited and corpus data provide strong evidence about the importance of frequency of exposure in L2 learning, suggesting that synonym acquisition is usage/exemplar-based, which supports the usage-based language acquisition theory proposed by Tomasello (2003) and others (e.g., Ellis, 2002, 2012). However, the analysis of the response patterns also shows that the effect of frequency can be a double-edged sword on synonym learning for L2 learners because the EFL/ESL subjects were also found to favor the most frequent item in a synonym set even when it was not the best choice based on the native speakers' responses. This shows a lack of ability to adopt a unique construal and usage warranted by context, an issue we explore below.

Construal: Advanced Acquisition Phase

Let us first look at the role of unique construal in native speakers' selections. Question 12 provides a good example. It asked the subjects to decide whether for a business to "engage in open and free competition without deception or fraud" was a *social duty*, *obligation*, or *responsibility*. According to the salience measures of the synonyms in the set in COCA, *social responsibility* is the most typical collocation with a total of 610 tokens (82% salience) as compared to only 34 tokens of *social duty* (5% salience) and 96 tokens of *social obligation* (13% salience). Yet, in answering this question, 55 percent (a majority) of the native speakers selected the less conventional usage social obligation, reflecting a construal that framed the need for businesses not to practice deception/fraud as an obligation, something much stronger than responsibility (Liu, 2013). Interestingly, many advanced EFL subjects also selected obligation, but with a lower percentage.

Another example showing the effect of construal on the native-speaker subjects' responses can be found in Question 2 and Question 6, both dealing with *authority/power/right to declare war*. For Question 2, in filling the blank in "the Constitution says Congress has the _____ to declare war," the majority (76 percent) of the native speakers chose the

most salient *power/authority*, that is, only 24 percent chose the least salient right. In contrast, in filling the blank in Question 6 concerning whether Israel had the _____ *to declare war* on Palestine if it was attacked by forces in Palestine, 67 percent of the native speakers chose *right* because, to them, being attacked by forces in Palestine gave Israel the *right* or justification to declare war. The native speakers' different construal led to a different response pattern in this question.

The native speakers' ability to appropriately choose between salient usage and context-required unique construal/selection is perhaps best shown in one native subject's explanations of his/her selections in Questions 3 and 5 related to *authority/power/right to vote*. He/she chose *right* to vote in Question 3 because, in his/her words, "I'm just used to hearing 'right to vote' (equated with suffrage)," but he/she selected the *power to vote* in Question 5 (i.e., in "the _____ to vote for 'None of the Above'") and his/her reason was: "Honestly, the other two just seem not to fit well. 'Power' equates 'ability'". Quite a few other native-speaker subjects exhibited a similar pattern in explaining their choices: relying on salient usage for usual context but resorting to unique construal for other contexts.

Compared with native speakers, the EFL/ESL subjects, especially the intermediate level ones, were often unable to have the appropriate construal and tended to rely blindly on usage salience in their synonym selection. Of course, the results also indicate that, as their English improves from the intermediate to the advanced level, this tendency decreases, thanks to their enhanced ability to better differentiate the nuances among the synonyms in a set. This can be clearly seen in their responses to the six questions involving the noun synonym set of *duty*, *obligation*, and *responsibility*. In this set, according to the COCA data, *responsibility* is the most frequent and dominant item. The nonnative subjects, especially the intermediate ones, consistently made significantly more use of *responsibility* than the native speakers in all of the six questions involving this synonym set, especially in questions 8, 9, and 10 where it clearly was not the best choice according to the native speakers. However, while the nonnative subjects tended to favor the most frequent item even when it was not the best synonym in a set, they (mainly those intermediate ones) sometimes also failed to select the most salient synonym in a set when it was in fact the best choice, as has been shown above.

This problem decreases notably, however, in the advanced nonnative

subjects' performance. This can be seen in the subjects' responses to the questions involving the synonymous adverb set *actually*, *genuinely*, *really*, and *truly* and the synonymous noun set *authority*, *right*, and *power*. For the *actually/genuinely/really/truly* synonymous set, in Questions 17 and 18, 40 and 53 percent of the intermediate and 35 and 54 percent of the advanced nonnative subjects, respectively, selected really (the most frequent adverb in the set) when *genuinely* together with *truly* constituted the best choice, that is, one selected by most of the native speakers (93 percent for Question 17 and 86 percent for Question 18). Conversely, in Question 14 where *really* was obviously the best choice, 30 percent intermediate, but only 12 percent advanced, nonnative subjects did not choose it. Similarly, in Question 16 where *really, really* was clearly the best choice, 34 percent of the intermediate, but only 4 percent advanced, nonnative subjects did not select it. The advanced nonnative subjects' response pattern on the latter two questions was essentially identical to the native speakers', indicating a significant improvement from the intermediate subjects.

Concerning the same problem shown in the *authority/power/right* set, in question 4 ("university administrators should have the _____ to fire incompetent faculty members"), *authority/power* were the choice for over 80% of the native speakers and advanced nonnative speakers, but 38% of the intermediate nonnative subjects selected *right* (the most frequent item in the set). Similarly, in Question 6 where the best choice was *right* (i.e., Israel had the *right* to declare war after being attacked by forces in Palestine), 68% of intermediate nonnative subjects did not select *right*, but the advanced nonnative subjects' response pattern to the question was similar to that of the native English speakers (i.e., not significantly different). In short, all the findings suggest that, in L2 synonym acquisition, learners begin to show a grasp of some salient usages or fine meanings of some synonyms, but it is not until at the advanced level that they begin to display some ability to form unique construals in synonym selections called for by unique contexts.

A brief comparison of the three groups' general patterns of explanations of their synonym choices further supports this acquisition trajectory. The explanations fall roughly into five categories of rationales: conventional/salient usage, word meaning, unique construal, stylistic (formal/informal), and instinctive feeling/guessing (samples of each category are provided in Appendix II). The numbers in each category

by group are reported in Table 6 along with the deviation percentage of each cell based on a Chi-square test. The results of the Chi-square, $x2(8, N=108)=103.05$, $p=.0001$/Cramer's $V=.2$, show a significant difference among the groups' rationales. The percentage deviations indicate that significant differences are found mainly in the salient-usage, unique-construal, and feeling-guessing categories. However, while the three groups' numbers in the word-meaning category (the dominant category for all three groups) are fairly comparable (no significant deviations), many of the nonnative's explanations in the category are actually incorrect, for example, one intermediate subject explained his/her selection of *religious obligation* instead of *religious duty/responsibility* in Question 7 as "Responsibility depends on subjective judgment, obligation is more formal than duty." More importantly, while the intermediate nonnative subjects' portion in the feeling-guessing category is significantly higher (177.5 percent higher) than expected, their percentages in the salient-usage and unique-construal categories are substantially lower (44.9 percent and 66.9 percent) than expected. The deviations of the advanced nonnative group's percentages in said categories are much smaller, hence much closer to the native speakers', offering further evidence for the aforementioned L2 synonym acquisition trajectory.

Table 6: Synonym selection rationales by group and category: Frequencies and percentage deviations

Group	Salient-Usage	Word-Meaning	Unique-Construal	Stylistic	Feeling-Guessing
Inter-m Nonnative	20(-44.9%)*	189(-0.7%)	7(-66.9%)	16(+19%)	45(+177.5%)
Adv Nonnative	32(-14%)	199(+2.2%)	18(-16.9%)	17(+23.3%)	18(+8.2%)
Native	118(+22.2%)	502(0.5%)	74(+31.6%)	30(-16.1%)	13(-69.9%)

* 1. – indicates a percentage lower than expected; 2. + signals a percentage higher than expected.

CONCLUSION: LIMITATIONS AND PEDAGOGICAL IMPLICATIONS

This study has three limitations. First, the sample size of the advanced ESL learners in the elicited data study was much smaller than the other

two groups', an issue that could have affected the reliability of the study. Second, as noted earlier, this study involved mixed L2 subjects (EFL and ESL). Future studies using groups of the same size and same context are needed to test the findings of this study. Third, due to limited space, this study used corpus data/analysis only as a reference. Well-designed, full-scale corpus studies comparing native and nonnative use of synonymy should be done in the future to help better triangulate experimental research findings.

The findings of this study about L2 synonym acquisition trajectory and the special difficulties L2 learners' experience in synonym learning have a few important implications for synonym learning/teaching, which include the following:

1. Given that the typical collocates of a synonym constitute the key information for understanding and learning the use of synonyms, we should pay special attention to this type of information in synonym learning/teaching. Furthermore, research (Liu & Jiang, 2009; Yeh, *et al.*, 2007) has also demonstrated the effectiveness of using corpus data in teaching such collocational information to enhance L2 learners' grasp of synonyms. Thus, teachers should work hard to draw students' attention to the most frequent collocational patterns and other contextual usage information of a synonym by using corpus analysis if possible.
2. Because of frequency effect, it is most sensible in the teaching of a synonym set to start with the most frequent/dominant synonym in the set. This practice is also supported by the finding that the dominant item sometimes crosses into the semantic and functional territories of the other synonyms (Liu, 2013). Grasping the dominant member first should enable learners to communicate their basic thoughts without a large vocabulary.
3. However, whereas it is sensible to begin with the dominant word in a synonym set, sustained efforts should be made to encourage L2 learners to increase their use of the less frequent synonyms in the set. This is because, as the results of both the elicited and corpus data analyses have shown, L2 learners substantially underuse/misuse the less dominant members compared with native English speakers.
4. As the learners' language proficiency increases, learners should pay more attention to the nuances of the synonyms and to the issue of construal in order to gain a better grasp of the finer-grained differences among synonyms.

Notes

1. We equate *synonym* with *near-synonym* because, as many linguists (Stubbs, 2001; Taylor, 2003) have argued, true synonyms are rare unless we include cross-dialect synonyms. All synonyms are truly near-synonyms. For simplicity purposes, we use *synonym* in this paper.
2. Geeraerts and colleagues (Geeraerts, Grondelaers, & Bakema, 1994; Grondelaers & Geeraerts, 2003) call this type of lexical salience *onomasiological salience*, which differs from *semasiological salience* (the degree of semantic prototypicality of a word for the concept/referent it refers to). The determination of the latter salience often entails a construal on the part of the speaker/writer, an issue that will be discussed later in this article.
3. L2 learners' difficulty with conventional usages may have resulted partially from L1 interference, as collocations sometimes vary across languages, an issue worth exploring in future research.

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APPENDIX I

Synonym Question Items with Subjects' Choices by Groups and Chi-Square Results

Note: *1. IntNNS/AdvNNS/NS are abbreviations for the intermediate nonnative speakers, advanced nonnative speakers, and native speakers. The numbers under each synonym are the numbers of the subjects of the three groups that selected the synonym*

respectively. The number in bold for each group designates the most favorable item/choice for the group in that question.

2. *Concerning the Chi-square results, for those items where a significant difference was found among the three groups, the results of the Chi-square tests between the IntNNS/the NS groups and between the AdvNNS/NS groups are also reported. All significant results are marked in bold.*

1. If these people had full automatic weapons like M–16s or AK–47s, then obviously the police are well within their _____ to arrest them.

	A. authority	B. right	C. power
IntNNS:	**21**	9	10
AdvNNS:	**17**	5	4
NS:	13	**25**	4
Chi-square:	***17.864;***	***Sig:.001;***	***Cramer's V:.288***
IntNNS-NS:	***11.942;***	***.003;***	***.382***
AdvNNS-NS:	***10.694;***	***.003;***	***.397***

2. Article 1, section 8 of the Constitution says Congress has the _____ to declare war.

	A. authority	B. right	C. power
IntNNs:	**16**	14	10
AdvNNS:	8	7	**11**
NS:	12	10	**20**

Chi-square: *4.733; Sig:.316; Cramer's V:.148*

3. It is the 1954 Supreme Court decision to outlaw racial supremacy. It basically said that all Americans should have the _____ to vote

	A. authority	B. right	C. power
IntNNs:	2	**35**	3
AdvNNS:	0	**26**	0
NS:	0	**42**	0

Chi-square: *8.913; Sig:.063; Cramer's V:.203*

4. He firmly believes university administrators should have the _____ to fire professors who are incompetent or irresponsible.

	A. authority	B. right	C. power
IntNNs:	13	**15**	12
AdvNNS:	9	5	**12**
NS:	**19**	7	16

Chi-square: *6.121; Sig:.190; Cramer's V:.168*

5. The group is trying to help initiate a new constitutional amendment that gives voters the _____ to vote for "None of the Above."

	A. authority	B. right	C. power
IntNNs:	5	**29**	6

AdvNNS:	0	**24**	2
NS:	0	**32**	10
Chi-square: 11.949;	***Sig:.018;***	***Cramer's V:.235***	
6.102;	***.047;***	***.273***	
2.870;	*.090;*	*.205*	

6. But, since the United States and United Nations agree that any country harboring terrorists is an enemy, as soon as Israel is attacked by forces in Palestine, it has the _____ to declare war on Palestine, go in to get the terrorists, and destroy Palestine altogether.

	A. authority	B. right	C. power
IntNNs:	**14**	13	13
AdvNNS:	4	**14**	7
NS:	11	**28**	3
Chi-square: 13.628;	***Sig:.009;***	***Cramer's V:.252***	
12.506;	***.002;***	***.383***	
5.579;	*.061;*	*.289*	

7. They [a religious group] have said that it's their religious _____ to kill those they consider to be their enemies.

	A. duty	B. obligation	C. responsibility
IntNNS:	8	**24**	8
AdvNNS:	2	**23**	1
NNS:	**25**	17	0
Chi-square:	***33.238;***	***Sig:.000;***	***Cramer's V:.392***
IntNNS-NS:	***17.915;***	***.000;***	***.467***
AdvNNS-NS:	***18.767;***	***.000;***	***.525***

8. He believes he has a civic _____ to promote recycling.

	A. duty	B. obligation	C. responsibility
IntNNs:	13	9	**18**
AdvNNS:	8	2	**16**
NS:	**36**	1	5
Chi-square: 34.305;	***Sig:.000;***	***Cramer's V:.399***	
24.510;	***.000;***	***.547***	
21.330;	***.000;***	***.560***	

9. It's my motherly _____ to be out here and try and make sure that this gun shop is relocated.

	A. duty	B. obligation	C. responsibility
IntNNs:	15	9	**16**
AdvNNS:	**15**	2	9
NS:	**32**	1	9
Chi-square: 15.518;	***Sig:.004;***	***Cramer's V:.268***	
14.469;	***.001;***	***.420***	

2.877; .237; .206

10. [The following is a statement made by a woman when discussing the fact that her ex-husband had not provided financial support for their children:] "If he's willing to fulfill his fatherly _____ now, let him."

	A. duty	B. obligation	C. responsibility
IntNNs:	10	10	**20**
AdvNNS:	8	4	**14**
NS:	**26**	8	8

Chi-square: 15.476; Sig:.004; Cramer's V:.268
12.435; .002; .389
9.246; .010; .369

11. It is my sad _____ to report this afternoon that my colleague, Tim Russert, moderator of "Meet the Press" and NBC's Washington bureau chief, collapsed and died early this afternoon.

	A. duty	B. obligation	C. responsibility
IntNNs:	**19**	10	11
AdvNNS:	**11**	7	8
NS:	**33**	4	5

Chi-square: 11.775; Sig:.019; Cramer's V:.233
8.547; .014; .323
9.258; .010; .368

12. Friedman [a renowned economist] famously argued in a 1970 *New York Times* magazine article: "There is one and only one social _____ of business — to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engage in open and free competition without deception or fraud."

	A. duty	B. obligation	C. responsibility
IntNNs:	3	17	**20**
AdvNNS	2	**14**	9
NS:	3	**23**	16

Chi-square: *1.799; Sig:.773; Cramer's V:.092*

13. She said she didn't know why she put up with him. _____, she did know; for to her, even in his stubbornness, he was still the sexiest man she'd ever seen.

	A. Actually	B. Genuinely
IntNNS:	**18**	11
AdvNNS:	**25**	0
NS:	**32**	0
	C. Really	D. Truly
IntNNS:	7	4
AdvNNS:	1	0

NS:	9		1
Chi-square:	***32.521;***	***Sig:.000;***	***Cramer's V:.388***
IntNNS-NS:	***16.931;***	***.001;***	***.454***
AdvNNS-NS:	*4.758;*	*.093;*	*.265*

14. Hewlett-Packard (a computer company) presents itself as a concerned and caring company with the customer's interests at heart. _____? Why, then, does HP refuse to make available print drivers that run under Vista for its older printers and scanners?

	A. Actually	B. Genuinely
IntNNs:	0	8
AdvNNS:	0	2
NS:	1	1
	C. Really	D. Truly
IntNNs:	**28**	4
AdvNNS:	**23**	1
NS:	**39**	0
Chi-square: 13.887;	***Sig:.031;***	***Cramer's V:.255***
12.240;	***.007;***	***.389***
3.268	*.352*	*.221*

15. If North Korea is _____ prepared to completely and verifiably eliminate their nuclear weapons program, the U.S. Government will be willing to normalize bilateral relations ... and assist in meeting the energy and other economic needs of the North Korean people.

	A. actually	B. genuinely
IntNNs:	5	**14**
AdvNNS:	2	6
NS:	4	18
	C. really	D. truly
IntNNs:	10	11
AdvNNS:	3	**15**
NS:	1	**19**
Chi-square: 13.971;	***Sig:.030;***	***Cramer's V:.254***
10.605;	***.018;***	***.350***
4.629;	*.201;*	*.261*

16. As a singer, she's been working _____, _____ hard.

	A. actually, actually	B. genuinely, genuinely
IntNNs:	1	12
AdvNNS:	0	1
NS:	0	1
	C. really, really	D. truly, truly
IntNNs:	**26**	1

AdvNNS:	**25**		0
NS:	**40**		1
Chi-square: 19.386;	***Sig:.004;***	***Cramer's V:.300***	
13.236;	***.004;***	***.402***	
.738;	*.692;*	*.104*	

17. [The following was part of former CIA Director's response to questions about what some people considered illegal measures CIA had taken in trying to prevent terrorism.] "We had lost 3,100 Americans [in 9/11], more than at Pearl Harbor. We had had an attack with anthrax that we didn't understand. We were _____ worried about the possibility of a nuclear or other mass attack."

	A. actually	B. genuinely
IntNNs:	8	11
AdvNNS:	1	8
NS:	0	**35**
	C. really	D. truly
IntNNs:	**16**	5
AdvNNS:	**9**	8
NS:	3	4

Chi-square: 40.525;	***Sig:.000;***	***Cramer's V:.433***	
29.496;	***.000;***	***.600***	
19.608	***.000;***	***.537***	

18. Although some people question his interest in changing things in Saudi Arabia, King Abdullah is invested in the idea of reform. He really _____ wants to change that country.

	A. actually	B. genuinely
IntNNs:	3	12
AdvNNS	2	8
NS:	0	**22**
	C. really	D. truly
IntNNs:	**21**	4
AdvNNS	**14**	1
NS:	6	13

Chi-square: 25.410;	***Sig:.000;***	***Cramer's V:.346***	
19.030;	***.000;***	***.485***	
19.273;	***.000;***	***.540***	

19. A Florida man _____ convicted of rape and robbery is free tonight, after serving 24 years in prison.

	A. erroneously	B. inaccurately
IntNNS:	4	4
AdvNNS:	6	0
NS:	4	1

	C. incorrectly	D. mistakenly	E. wrongly
IntNNS:	2	**18**	12
AdvNNS:	1	**10**	9
NS:	0	5	**32**
Chi-square:	***27.255;*** ***Sig:.001;***	***Cramer's V:.355***	
IntNNS-NS:	***20.202;*** ***.000;***	***.496***	
AdvNNS-NS:	***13.987;*** ***.007;***	***.453***	

20. [The following is a correction by *People* magazine:] "In our 6/29 issue, a photograph of actor Gale Hansen was _____ identified as Josh Charles."

	A. erroneously	B. inaccurately	
IntNNS:	1	6	
AdvNNS:	2	1	
NS:	5	2	
	C. incorrectly	D. mistakenly	E. wrongly
IntNNS:	9	**17**	7
AdvNNS:	2	**19**	2
NS:	10	**25**	0
Chi-square:	***18.572;*** ***Sig:.017;***	***Cramer's V:.293***	
	13.202; ***.010;***	***.401***	
	6.358; *.174;*	*.306*	

21. In this film, a Southern black man was _____ accused of rape.

	A. erroneously	B. inaccurately	
IntNNs:	6	1	
AdvNNS:	6	0	
NS:	2	1	
	C. incorrectly	D. mistakenly	E. wrongly
IntNNs:	4	**19**	10
AdvNNS:	0	9	**11**
NS:	0	0	**39**
Chi-square:	***48.684;*** ***Sig:.000;***	***Cramer's V:.475***	
	42.140; ***.000;***	***.717***	
	25.317; ***.000;***	***.610***	

22. The company was criticized by the court judge for using "flowery talk" (nice language) to _____ portray its environmental record to shareholders.

	A. erroneously	B. inaccurately	
IntNNs:	7	**21**	
AdvNNS:	4	**18**	
NS:	4	**35**	
	C. incorrectly	D. mistakenly	E. wrongly
IntNNs:	6	6	0
AdvNNS:	2	2	0

NS:	1	0	2
Chi-square: 17.140;	***Sig:.029;***	***Cramer's V:.282***	
15.850;	***.003;***	***.440***	
6.374;	***.173;***	***.306***	

23. John and Patsy Ramsey were for quite some time _____ suspected in the murder of their daughter.

	A. erroneously	B. inaccurately	
IntNNs:	7	5	
AdvNNS:	2	0	
NS:	5	1	
	C. incorrectly	D. mistakenly	E. wrongly
IntNNs:	8	9	**11**
AdvNNS:	1	**15**	8
NS:	1	6	**28**
Chi-square: 34.815;	***Sig:.000;***	***Cramer's V:.403***	
16.445;	***.002;***	***.451***	
14.629;	***.006;***	***.467***	

24. Then the student is given a series of questions to answer. If the student answers _____, the student has to study the questions again.

	A. erroneously	B. inaccurately	
IntNNs:	4	11	
AdvNNS:	1	0	
NS:	1	1	
	C. incorrectly	D. mistakenly	E. wrongly
IntNNs:	**14**	2	9
AdvNNS:	**23**	0	2
NS:	**39**	0	0
Chi-square: 42.762;	***Sig:.000;***	***Cramer's V:.447***	
32.918;	***.000;***	***.637***	
3.970;	*.265;*	*.243*	

APPENDIX II

Samples of the Subjects' Rationales for Synonym Selections by Category

Samples of Category 1 "Conventional/Salient Usage"

"*Civic duty* is a 'set phrase'." (given by a native speaker for choosing *civic duty* in Question 8)

"*Voting right* is a phrase." (given by a nonnative speaker for choosing *right to*

vote in Question 3)

Samples of Category 2 "Word Meanings"

"*Actually* suggests (means) an opposition to a previous sentence's assertion." (given by a native speaker for choosing *Actually, she did* in Question 13)

"*Power* represents strength and authority." (given by a nonnative speaker for choosing *power to declare war* in Question 2)

Samples of Category 3 "Unique Construals"

"*Power* equates *ability*; here *right* just seems not to fit." (given by a native speaker for choose *power to vote for "None of the Above,"* rather than *right to vote,* in Question 5)

"It's justifiable, and it's something that somebody is entitled to do if they are hurt." (given by a nonnative speaker for choosing *right to declare war* by Israel when attached by forces in Palestine, rather than *authority/power to declare war*, in Question 6)

Samples of Category 4 "Style (Formal vs. Informal)"

"Seems too informal to say *really, really*." (given by a native speaker for choosing *really, genuinely*, rather than *really, really*, in Question 18)

"*Obligation* sounds more formal than *responsibility*." (given by a nonnative speaker for choosing *religious obligation* in question 7)

Samples of Category 5 "Intuitive Feelings/Guessing"

"I don't know why, just seems right." (given by a native speaker for choosing *religious obligation* in Question 7)

"I guessed." (given by a nonnative speaker for choosing *genuinely worried* in Question 17)

Chapter 14

Using Corpora to Help Teach Difficult-to-Distinguish English Words

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INTRODUCTION

While learning vocabulary in an L2 is generally very challenging, some words are especially difficult, such as synonyms/near-synonyms[1] (Hatch & Brown, 1995; Laufer, 1991; Martin, 1984; Nation, 2001). Synonyms are difficult because while they express essentially the same meaning, they do so in different manners, for different contexts, and/or from different perspectives, i.e., they are often not entirely interchangeable (Edmonds & Hirst, 2002; Hatch & Brown, 1995; Liu, 2010a, 2013; Liu & Espino, 2012). Added to the difficulty is the fact that often some L2 synonyms are not lexicalized or differentiated in learners' L1 (i.e., they are translated as the same word in their L1). For example, the English synonyms in each of the following two sets are often translated into the same word in Chinese (also the same word in some other languages such as Korean and Japanese): *demand/request/require*>要求, and adverbs *incorrectly/wrongly* (also *erroneously/mistakenly*)>错误的. Besides synonyms, there are some other related-words in a target language that may also be undifferentiated in form in learners' L1, e.g., both *borrow* and *lend* are translated as借in Chinese, and both *doubt and suspect* are translated as怀疑. Due to L1 interference/transfer, L2 learners often have difficulty correctly using these closely related words (Hatch & Brown, 1995; Jiang, 2000; Lee & Liu, 2009; Liu & Zhong, 2016). Thus, how to help learners effectively grasp the use of these words has been an important but challenging task for L2 teachers. Recent research in corpus linguistics and corpus-based language teaching has, however, begun to show that corpus analysis can effectively differentiate synonyms and may help L2 learners better grasp them (Lee & Liu, 2009; Liu, 2010a, 2013; Liu & Espino, 2012; Stubbs, 2001; Tsui, 2004; Yeh, Liou, & Li, 2007). It is the purpose of this paper to discuss, based on research including publications by the author, how to use corpora to assist L2

students in grasping difficult-to-distinguish synonyms and other related words. The paper will begin with a brief overview of research (especially corpus-based studies) on synonyms and their use. Then it discusses, with specific examples of learning activities and exercises, how corpus analysis and its results can be used to help learners differentiate closely-related words and grasp their usage patterns. It concludes with a summary of both the benefits and challenges of such a teaching practice and some strategies for dealing with the challenges.

CORPUS ANALYSIS AS AN EFFECTIVE TOOL FOR SYNONYM STUDY: AN OVERVIEW

Synonymy and Corpus Analysis

Synonyms may differ in "any aspect of their meaning," including "denotational," "expressive," and "structural" aspects (Edmonds & Hirst, 2002, p.109). The differences are often subtle and difficult to discern. Consequently, there was not much research progress made in the study of synonymy until the 1980s when experimental and corpus-based studies began yielding empirical evidence for the Firth/Halliday/Sinclair lexical semantic theory that the meaning of a word is largely shaped by its collocates (Firth, 1957; Halliday, 1966; Sinclair, 1966, 1991), a theory arguably best articulated by Firth's (1957, p.11) now famous quote: we "know the word by the company it keeps."

One of the first synonym studies focusing on the contextual correlates of words was Miller & Charles (1991). In this study, the researchers had native English speakers rate the degree of similarity and substitutability between words in pairs embedded in sentences (contexts) taken from corpus data. Their results showed that "the more often two words can be substituted into the same contexts the more similar in meaning they are judged to be" (Miller & Charles, 1991, p.1). Later, Church, Gale, Hanks, Hindle, & Moon (1994) also did a "lexical substitutability" study, which involved the synonyms *ask for*, *request*, and *demand* in corpus data, and their study produced essentially the same finding that the "textual substitutability" of multiple lexical items is a strong barometer of their semantic similarity (p.169).

These early studies have later led to the development of an effective corpus-based approach to the study of synonyms and lexical semantics in general called the "behavioral profile" (BP) approach (Hanks, 1996). This

approach examines the meanings and usage patterns of lexical items by concentrating on the distributional patterns of words, particularly their collocates. In arguably the first corpus-based BP study, Hanks (1996), using the British National Corpus (BNC) data, produced the BPs of several verbs including *urge*, *incite*, *bother*, and *abandon*. The BPs were based on the syntactical collocational patterns of these verbs, especially their subjects, objects, and modifying adverbs, and the frequencies with which the various patterns were used. Such BP information helped clearly define each verb's primary and secondary meanings and differentiate it from its synonyms. In other words, the BP analysis helps provide valuable information that we may not be able to obtain otherwise. Since Hanks' study, there have been quite a few sophisticated BP studies of synonymous verbs (e.g., Divjak & Gries, 2006) and adjectives (Gries & Otani, 2010; Liu, 2010a), as well as a couple on nouns (Janda & Solovyev, 2009; Liu, 2013) and one on adverbs (Liu & Espino, 2012).

While corpus-based studies on synonymous verbs concentrate largely on their subjects, objects, and adverbs, those on synonymous adjectives (Justeson & Katz, 1995; Liu, 2010a) focus mainly on the nouns they typically modify. This is because the types of nouns the adjectives typically modify can most effectively reveal the meanings of the adjectives, as evidenced Liu's (2010a) study on the *chief/main/major/primary/principal* synonym set. By examining the types of nouns that the five adjectives frequently modify, Liu (2010a) was able to identify the major semantic and usage differences among the five adjectives. Although all of the five adjectives may modify abstract nouns (e.g., *chief/main/major/primary/principal concerns/goals*), they each also have unique types of nouns they modify. For example, while *main* is the only one that often modifies concrete nouns (e.g., *main dish/gate/lobby*), *chief* is employed mainly to modify position titles of power (*chief executive/justice/operating officer*), and only *primary* is used to modify nouns that are first in order of a series (e.g., *primary care/election/school*). In order to determine and compare the degrees of importance the adjectives carry, Author also examined the frequencies the adjectives were used with the definite/indefinite (a/the) and singular/plural nouns. The examination reveals that *main* conveys the highest importance, while *major* expresses the lowest. Other important collocates for studying synonymous adjectives include the typical adverbs that modify a given adjective.

While the corpus-based studies on synonymous adjectives have

focused mainly on the typical nouns adjectives modify, those on synonymous nouns (e.g., Liu, 2013) have concentrated on the typical modifiers (adjectives and infinitives) of the synonymous nouns in a set because the semantic types of the modifiers of nouns may help best uncover the semantic and usage differences among the synonymous nouns. For example, by examining the typical modifiers of two sets of synonymous nouns *authority/power/right* and *duty/obligation/responsibility*, Liu (2013) has successfully determined the semantic/usage differences among the nouns in each set. For example, *authority/power/right* differ in the source and nature of the power/right they typically refer to. In terms of source of power/right, although "law/constitution" may be a major source for all three nouns, "office" (an official position/institution) is a unique source for only *authority/power* (e.g., the *authority/power to appoint/arrest/veto*) whereas "birth" (natural prerogative) is the key source for *right* (e.g., the *right to live/speak/vote*). Concerning the nature of power/right, while *authority* and *power* are primarily "official," *right* is essentially individual. As for the differences among *duty/obligation/responsibility*, while all three nouns can refer to things that one needs to do based on one's job, membership in a community, and/or established morality, *duty* and *obligation* are much stronger than *responsibility* in terms of the expressed degree of commitment/dedication/necessity. More importantly, *duty* is sometimes used to refer to an undesirable thing that a person has to do based on his/her religious beliefs and/or assignment/job, etc. (e.g., *sad duty* and *military/religious duty to kill*), whereas *obligation* mostly means something one must do due to a mutual agreement and/or commitment.

In corpus-based research on synonymous adverbs, the focus has been on the verbs and the adjectives that the synonymous adverbs in a set each typically modify, as well as the positions in a sentence the adverbs each usually appear in. This is because while the verbs and adjectives that adverbs modify often provide valuable information about the meanings and usage patterns of adverbs, the sentential positions they typically appear in are also very helpful information for differentiating adverbs due to the fact that adverbs may appear in different positions in a sentence and that the different positions an adverb takes may result in different meanings, as can be seen in the following two examples:

a. *Strangely,* he talked a lot at the meeting.
b. He talked *strangely* at the meeting.

Because of the sentential position variation of *strangely*, the meanings of the two utterances differ: sentence A means that it was strange that "he" talked a lot while B means "he" talked in a strange fashion. Liu & Espino's (2012) study on *actually/genuinely/really/truly* demonstrates that it is an effective approach in studying synonymous adverbs to focus on their verb/adjective collocates and sentential positions. The results of the study reveal that whereas all of the four adverbs may express/emphasize the meaning of reality/truth, they differ noticeably in usage. *Actually* is typically used to highlight a fact by contradicting what has been said or believed to be and it is often used clause-initially (e.g., "He said he didn't know it; *actually*, he did know it"). In contrast, *really*, the most frequently used adverb in the set, is used mainly as an emphasizer/intensifier (e.g., "She is really good"). *Genuinely/truly*, the most infrequent ones in the set, are used mainly to modify adjectives and verbs of attitude/emotion to help stress the truthfulness of the attitude/emotion in question (e.g., "Tom *genuinely/truly* loves Mary").

As we conclude the discussion in this section, it is imperative to note that while corpus analyses can help us effectively differentiate synonyms, the task is often a complex one. The person who does the corpus query and analysis will often have to try not only different types of information to examine but also different ways/perspectives at looking at the query results. As Hanks (1996, p.96) states,

> But the [usage] patterns do not spring, untouched by human hand, fully fledged from the corpus. They have to be teased out, often painstakingly and slowly. Procedures have to be developed for distinguishing relevant features from noise. Appropriate levels of generalization have to be chosen at every step.

In short, querying and analyzing corpus data for language usage patterns is a complex and challenging endeavor.

L2 Synonym Learning, Use, and Teaching

All of the aforementioned corpus-based studies are related to L1 or native-language speakers' use of synonyms. Few studies have examined the use and learning of synonyms in L2. Lee & Liu (2009), Liu & Zhong (2016), Tsui (2004), and Yeh, et al. (2007) appear to have been the only ones. Using both corpus and elicited data (fill-in missing words with the right synonyms), Liu & Zhong (2016) investigated intermediate and advanced Chinese EFL learners' use of four sets of synonyms against native English

speakers' use of them (*authority/power/right*, *duty/obligation/responsibility*, *actually/genuinely/really/truly*, and *erroneously/incorrectly/mistakenly/wrongly*). The results of both the corpus and elicited data analyses show that EFL learners, even advanced ones, have serious difficulty knowing which synonym to use in a given context. More importantly, it is found that not knowing the right choice in such a context essentially means not knowing the typical collocates of a given synonym. For example, many Chinese EFL learners did not know that native English speakers typically say *fatherly/motherly/religious/sad duty* (rather than *fatherly/motherly/sad obligation/responsibility*). This finding highlights the importance of learning the typical collocates of a word in L2 synonym learning.

Using corpus-search generated findings (in the form of lists or concordance lines), Lee & Liu's (2009) and Yeh, et al.'s (2007) studies each investigated the usefulness of having EFL learners focus on the typical collocates of synonyms in understanding/learning the different usage patterns of the target synonyms. They gave their students tests and questionnaires to ascertain the effectiveness of such a learning approach. The results of both studies show that such an approach helped students successfully grasp the target synonyms and that students found the approach very useful. Tsui (2004) showed how corpus analysis helped nonnative English-speaker teachers in Hong Kong effectively differentiate synonyms such as *high/tall* and learn idiomatic lexical collocations. In fact, there have also been a few other studies showing the effectiveness of using concordances in helping EFL learners grasp word collocations in general (not just synonyms), including verb+noun and verb+preposition collocations (Chan & Liou, 2005; Sun & Wang, 2003; Liu, 2010b). The effectiveness of corpus-based/driven language learning also results from the discovering learning opportunities and the ample language input it provides to learners (Aston, 2001; Liu, 2010b, 2011; Liu & Jiang, 2009).

Before we move onto the next section on how to use corpus data in learning/teaching synonyms and other closely-related words, it is imperative to note that identifying the collocation information that differentiates synonyms is a challenging and sometimes labor-intensive task. Furthermore, sometimes, the analysis of the immediate collocates of synonyms may not yield the discerning information needed; in such a case, it requires a scrutiny of larger contextual information to truly understand the semantic differences among some synonyms because their immediate collocates do not reveal much about their differences. Let us look at the case of *surprise* and

amaze, two synonymous verbs that are often translated into the same word in Korean. While both verbs share the meaning of causing someone to feel surprised (e.g., "Tom has been known as a quiet and obedient employee; his vocal criticism of his boss has *surprised/amazed* everyone in the company"), they differ in that *amaze* may often conveys the sense of wonder/amazement, e.g., "The figure-skater's spectacular high flying triple axel jumps *amazed* not only the audience but also the judges." The verb *surprise* would not be appropriate in the latter sentence because it does not possess the sense of wonder/amazement. However, this subtle difference may be difficult for Korean (and some other Asian) EFL learners due to their L1 interference. For example, several of my former students from Japan, South Korea, and Taiwan, China wrote me something like the following in their post-graduation thank-you emails: "We're all surprised you were able to answer all of our questions." Though the statement was meant as a compliment, it actually was not. With the word "surprised," the statement actually meant that the writers all had thought I was an incompetent teacher and then was surprised to find out I was able to answer their questions.

The two verbs could not be differentiated by an examination of their typical (subject/object) collocates because these collocates are essentially identical for both verbs with many being pronouns (e.g., *It/you/he/she surprised/amazed me/him/her/us*). Of course, there is some collocation information that may help differentiate *surprise* and *amaze* to a certain degree, but such information requires close analyses to obtain. For example, a scrutiny of the nouns after *amazed/surprised at* will show that *amazed at* is sometimes followed by very positive noun phrases, such as *achievement/creativity*, showing again that *amaze* may express the sense of wonder/amazement. Also a look at the typical adverbs that modify the two verbs will show that *surprise* is frequently modified by the positive adverb of *pleasantly* but almost never modified by negative adverbs like *unpleasantly*, a fact that suggests that the act of *surprise is* typically viewed either negatively or in natural fashion. Otherwise, there would not be the need to use *pleasantly* to distinguish a specific surprise act from the other mostly negative or neutral ones. These two pieces of discerning information are not easy to find and are not sufficient to definitively differentiate the two verbs. Thus, we may need to examine the larger discourse context of each token of the two verbs in use by reading the entire sentence and sometimes the previous and following sentences. This way, we will find that, unlike *surprise*, *amaze* is quite frequently used in the positive sense of wonder/amazement.

TEACHING DIFFICULT-TO-DIFFERENTIATE WORDS WITH CORPUS DATA ANALYSIS: SOME EXAMPLES

What Corpus and Query/Analysis Procedures to Use and Some General Principles

To discuss how to use corpus-based activities to teach difficult-to-distinguish synonyms and other closely-related words, we must first address some basic issues, such as which corpus/corpora to use, what corpus query procedures/techniques to employ, and how to conduct corpus analysis. In terms of which corpus to use, given our need to identify the typical usage patterns of English synonyms, the corpus we use has to be large so as to ensure the reliability and validity of the data. This is because, when other variables are constant, the larger a corpus is, the more representative/reliable its data will be. Currently, the free online 450 million-word Corpus of Contemporary American English (COCA) provided by Mark Davies of Brigham Young University is an excellent choice. Besides being large and freely accessible, COCA boasts systematically-selected data and consists of five sub-corpora that represent most of the major registers/genres including speaking, fiction, newspaper, magazine, and academic writing. Furthermore, COCA is equipped with a powerful and user-friendly search engine that offers a variety of useful query functions which can yield various types of meaningful information. For example, one can effectively and efficiently query for collocates by part of speech using the "part of speech" searching codes it provides, e.g., querying for all the nouns after the adjectives before the noun *authority* (for information about the query codes and functions, read the introduction information on the COCA interface/webpage). Also and importantly, a query of the collocates of a word/structure may generate not only the frequency but also the Mutual Information (MI) score for each collocate. MI (developed/introduced by Church & Hanks, 1990) is a statistical procedure that determines how likely two words may co-occur by comparing "the probability of observing *x* [word] and *y* [word] *together* (the joint probability) with the probabilities of observing *x* and *y independently* (chance)" (p.23). The ability of COCA to generate both frequency and MI information for lexical collocates is especially helpful for researching and teaching synonymous and other closely-related words. Specific examples of collocation query and analysis procedures will be provided below.

Given the complexity and difficulty involved in corpus query and

analysis of the usage patterns of difficult-to-differentiate words as has been shown above, it is necessary to note, before we proceed further, that teachers should usually do a corpus query/analysis of the semantic/usage patterns of the synonyms they plan to teach before class, so they can be well prepared. Research (Tsui, 2004) has found that corpus analysis is especially helpful for teachers in helping them become prepared for teaching difficult language usage issues. Another important point to bear in mind is that generally we should not engage low/intermediate-level students in direct corpus queries and analyses, especially not in the initial stage. Instead, teachers can use the results of the corpus queries and analyses they did to develop various learning materials/activities to help students more effectively learn the target language usages. Four specific examples are given below to illustrate how corpus analyses and results can be used in teaching difficult-to-distinguish words, including three sets of synonyms (*incorrectly/wrongly*; *important/significant*; *demand/request/require*) and one set of closely related words (*doubt/suspect*). These sets are chosen because the words in each set are often difficult for Korean and some other Asian EFL learners to distinguish and learn.

Teaching Synonymous Adverbs: Incorrectly and Wrongly

Corpus queries and analyses

We begin with *incorrectly/wrongly* because, of the words in each of the four sets, these two are the easiest to differentiate. A simple, straightforward query of the verbs they each typically modify will clearly reveal their semantic/usage differences. We do not need to query for their typical adjective collocates because these adverbs do not modify adjectives (i.e., no one says **incorrectly/wrongly good/large*). To query for the verb collocates of each adverb, simply type, in the search string space, "incorrectly [vv*]" or "wrongly [vv*]" where [vv*] stands for all the lexical verbs and their forms. Figures 1 and 2 are screenshots of the queries and results for each of the two adverbs. The verbs they each modify are listed in order of the frequency (shown in the frequency column). Because I selected "lemma" instead of "word" for the display of the results, the verbs (also the adverb) are listed in their basic form (infinitive form for verbs), but they each include all of its other tense forms, e.g., [accuse] stands for *accuse/accuses/accusing/accused*. The "All" column displays the total frequency of the verb (in all its forms) in COCA; the "%" column lists what percentage each "incorrectly+verb" collocation accounts in the

total frequency of the verb; the MI column reports the MI scores. The higher an MI is, the stronger the tendency for the words to collocate is. A comparison of the results between the two adverbs shows clearly that the verbs they each typically modifier differ noticeably. While both are used to modify *identified/assumed*, *wrongly* is the only one that modifies *accused/convicted/imprisoned*, verbs that deal with law or justice. In fact, the unusual strong association of *wrongly* with these law-related verbs is evidenced not

Figure 1: Typical verbs modified by *incorrectly* in COCA

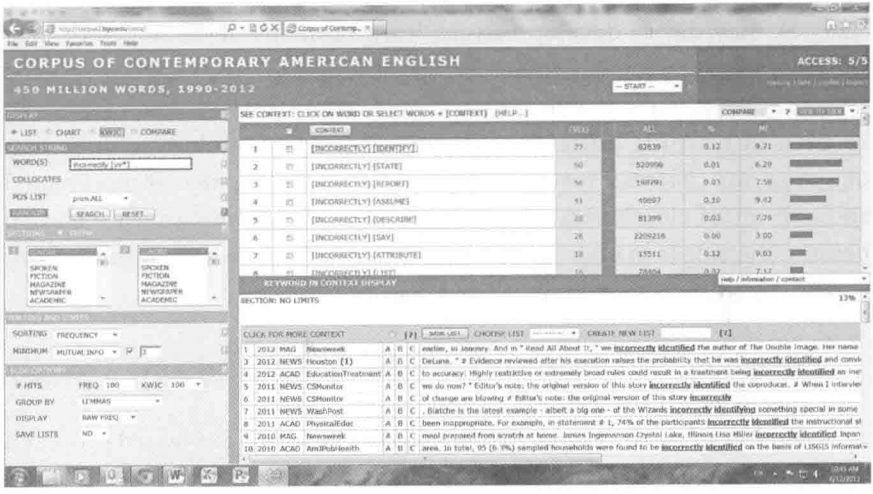
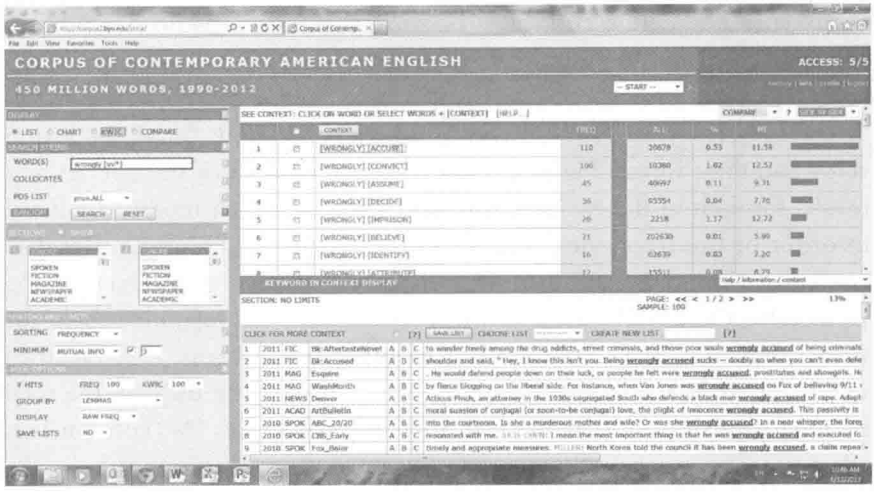


Figure 2: Typical verbs modified by *wrongly* in COCA



only by their high frequencies but also their very high MI scores: the MI scores for *wrongly* and the three verbs are the highest (all above 11.58), much higher than its MI scores with any of the other verbs. This unique usage of *wrongly* indicates it carries the meaning of *unjustly*, *unfairly*, and/or *unethically/immorally*, a meaning that *incorrectly* (as well as all the other synonyms in the set such as *erroneously/mistakenly*) does not possess.

It is imperative to note that, in many cases, to truly understand the semantic differences between two synonyms, we will need to read and analyze the concordance lines of the result tokens (the actual sentences in which the synonym is used), a practice we will discuss below in due course. To help students understand the identified difference between *wrongly* and *incorrectly*, the teacher can do the following depending on the students' English proficiency level and some other factors. If the students are at the upper-intermediate level or above and if the classroom is equipped with Internet access, then the teacher can do the queries with the class or have students do guided queries by themselves (if each students has a computer). Then ask students to compare the results and identify the difference, but the teacher should be ready to provide any necessary assistance/guidance. For students of other levels, the teacher can give students the query results (the frequency lists in a printout or on a screen) directly and then do the analysis with them. In addition to working on identifying the semantic/usage differences based on corpus query results, the teacher can and should also use the corpus data and analysis results to develop additional learning materials/activities to help students fully grasp the two adverbs. Three types of exercises are included below as examples of possible learning activities or exercises. All the sentences in the exercises, except for those erroneous ones in the error identification and correction activity, are taken or adapted from COCA. The erroneous ones were actual sentences produced by EFL/ESL speakers. The reason for using sentences from COCA is to ensure the authenticity and the meaningfulness of the teaching materials.

Sample learning activities

(1) Exercise 1: Decide whether *incorrectly* or *wrongly* fills in each blank better semantically; write *either* if you believe either adverb works equally well.

   a. The United Nations TV had _____ identified Mr. Smith as the ambassador. (*either*)

   b. Because of this decision, some schools have been _____ punished. (*wrongly*)

c. It seems clear that whoever takes advantage of their temporary power over a child's body to perform the operation must be abusing this power and acting _____. (*wrongly*)
d. These English learners pronounced some of the words _____. (*incorrectly*)
e. Some parents have been _____ charged with child abuse. (*wrongly*)

(2) Exercise 2: Decide whether *incorrectly*, *wrongly* or either adverb may replace each underlined word while keeping the original meaning and tone of the sentence.
a. It has been found that some of the prisoners were unjustly convicted. (*wrongly*)
b. His mental disease prevented him from understanding that he acted illegally in not obeying the law. (*wrongly*)
c. I believe that Marissa Mayer was inaccurately identified as "Melissa." (*either*)
d. As a result, a child may be mistakenly diagnosed with the disease. (*either*)
e. The newspaper unfairly blamed the lawyer for the problem. (*wrongly*)

(3) Exercise 3: Some of the underlined uses of *incorrectly* and *wrongly* are inappropriate. Identify and correct them. Then translate the sentences into Korean.
a. I incorrectly identified Brit Hume as being located at the White House right now. (*correct*)
b. There is a complaint process, and we would encourage her to follow up on that if she thinks she been treated incorrectly. (*wrongly*)
c. Because of an editing error, David Hilliard's job title was wrongly described in a story yesterday on the Oakland mayoral campaign. (*correct although incorrectly preferable*)
d. By using tax money for personal trips, the governor certainly acted incorrectly. (*wrongly*)
e. It's reported that two men in California were incorrectly imprisoned for 17 years. (wrongly)

The reason for asking students to translate the sentences in Exercise 3 is that research (Laufer & Girsai, 2008; Nation, 2001) has shown translation is very helpful for learning lexical items whose meaning and usage in L2 differ noticeably from those in learners' L1, because it helps raise learners' consciousness of the inter-lingual differences in the words being learned.

Teaching Synonymous Adjectives: Important and Significant

Corpus queries and analysis

Compared with *incorrectly/wrongly*, *important* and *significant* are more difficult to differentiate, as will be shown below. To effectively understand the difference between the two adjectives, we can begin by identifying the typical nouns they each modify, a practice that research has shown to be very effective for studies on synonymous adjectives (Justeson & Katz, 1995; Liu, 2010a). A query of "important [nn*]"/"significant [nn*]" where [nn*] stands for all nouns in both singular and plural forms will quickly generate the information we need. For lack of space, in lieu of screenshots, the results (concerning the top ten most common noun-collocates and their frequencies and MI scores) are summarized in Table 1. It is clear from the results that the nouns that the two adjectives each typically modify differ substantially, for, of the ten top nouns on each adjective's list, only one (*role*) appears on both lists. An examination of the nouns on each list indicates that while most of the nouns modified by *important* refer to non-relational things, etc. (e.g., *thing/part/issue/step*), most of those modified by *significant* deal with either relationships (e.g., *difference/relationship* between two things and *effect/impact* of one upon another) or numbers (*number/amount*). However, a close look at the entire lists of the nouns the adjectives each modify indicates that while some of the nouns are modified much more frequently by one adjective, they also register a fairly substantial use with the other adjective. For example, while *difference* is modified by *significant* 6,024 times, it is also modified by *important* 584 times. Is there any difference in the meaning between *significant* and *important differences* and the other pairs like this? To answer this question would require us to look at additional collocation information and scrutinize concordance lines.

Table 1: Ten most frequently modified nouns by *important/significant* in COCA

Important			Significant		
Nouns Modified	Frequency	MI	Nouns Modified	Frequency	MI
thing(s)	6,241	6.57	difference(s)	6,024	9.34
*role(s)**	3,191	7.80	change(s)	1,365	5.67

(continued)

Important			Significant		
Nouns Modified	Frequency	MI	Nouns Modified	Frequency	MI
part(s)	2,954	6.28	number(s)	1,269	5.90
issue(s)	2,266	6.31	effect(s)	1,160	6.70
factor(s)	1,709	7.46	amount(s)	1,053	7.45
question(s)	1,490	5.45	*role(s)*	1,005	6.66
point(s)	1,442	5.20	relationship(s)	819	6.41
aspect(s)	1,136	7.92	impact(s)	801	7.22
step(s)	834	5.59	increase(s)	782	6.24
element(s)	763	7.21	predictor(s)	789	10.67

* Words in italics are on the lists of both adjectives.

One useful additional type of collocate to examine is the typical adverbs that are used to modify the adjective-noun pairs or simply before the two adjectives. A query of "[r*] important"/"[r*] significant" generates the results summarized in Table 2. On the surface, the results do not appear to be very informative because the top ten adverbs on both lists look fairly similar, e.g., six of them (e.g., *most/more/very*) overlap. Also, most of the adverbs including all of the six overlapping ones are degree or intensifying adverbs. These adverbs can modify any adjectives and do not have other unique meanings. Hence, they cannot help reveal the meanings of the adjectives they modify. However, a closer look indicates that there are two non-degree/intensifying adverbs on the list of *significant* (*statistically/clinically*) that can help differentiate it from *important*. It is particularly worth noting that *statistically* is by far the most frequent modifier of *significant* and also that, of all of the *adverb-important/significant* collocations in the list, the *statistically-significant* and *clinically-significant* collocations boast the highest MI scores, indicating their strong bond. Furthermore, these two adverbs are uniquely meaningful. When we say something is *statistically/clinically significant*, we mean that the referent is meaningful/important in statistical/clinical sense. So *significant* typically means meaningful/important in a particular sense/context or from a particular perspective, often based on some measurement (i.e., statistics). This explains why *number* and *amount* are among the most frequently modified nouns of *significant*. It also explains why *marginally* is a typical modifier of *significant* (a collocation registering the third highest MI score). This is because something may be statistically *significant* but

the statistical significance may be *marginal* (e.g., with a *p* value of .049 in a situation where a *p* of<.05 is considered significant). An examination of some of the concordance lines of the query results can help further explain this important difference between the two adjectives.

Table 2: Ten adverbs used most frequently to modify *important/significant* in COCA

Important			Significant		
Modifying Adverbs	Frequency	MI	Modifying Adverbs	Frequency	MI
most[*]	21,257	8.09	statistically	3,622	14.48
more	12,775	6.25	*most*	2,702	7.56
very	11,722	7.30	*more*	1,200	5.28
so	3,289	4.25	*very*	976	6.15
really	1,973	5.36	highly	361	8.55
less	1,326	5.68	*less*	201	5.40
extremely	1,221	8.43	clinically	170	12.08
equally	1,216	8.92	*particularly*	166	6.07
especially	1,110	6.35	marginally	126	11.93
particularly	1,032	6.86	*especially*	118	5.56

[*] Words in italics are on the lists of both adjectives.

For example, COCA has quite a few sentences related to 911 or some other phone number as being an *important* number. These numbers are indeed *important*, but not *significant*, because the importance of these numbers is not based on any sense of measure. In contrast, the significance of a number or a *significant number* has to be based on measurement, especially measurement of proportion, as is shown in the following sentence: "37 percent black ... live in extreme poverty areas ... that's a fairly *significant number*." Therefore, a *significant something* is generally not the same as an *important something* or vice versa. More importantly, there are some things that are *important* in their own right while some other things are generally *significant* in particular terms: "Freedom/food/energy are each *important* for humans" but "The correlation/difference/effect are often statistically *significant*." After explaining the differences between the two adjectives with these corpus analyses/results, we can then develop additional useful exercises like the following to help students reinforce their understanding.

Sample learning activities

(1) Exercise 1: Decide whether *important* or *significant* fills in each blank better semantically; write *either* if you believe either adjective works equally well.
   a. What is the most _____ decision you've made this year? (*important*)
   b. His anxiety is at a clinically _____ level. (*significant*)
   c. A _____ number of Americans still haven't decided who to vote for. (*significant*)
   d. Liberty is the most _____ thing for many Americans. (*important*)
   e. He made _____ contributions to the profession. (*either*)

(2) Exercise 2: Decide whether *important*, *significant*, or either adjective may replace each underlined word while keeping the original meaning and tone of the sentence.
   a. Four is a very meaningful number in this culture. (*important*)
   b. A large number of students failed the test. (*significant*)
   c. The two methods differ in a very substantial manner. (*important*)
   d. Government has a key role to play in shared prosperity. (*either*)
   e. The patient showed clinically meaningful improvements. (*significant*)

(3) Exercise 3: Some of the underlined uses of *incorrectly* and *wrongly* are inappropriate. Identify and correct them. Then translate the sentences into Korean.
   a. I will ask for your opinion on all significant questions. (*important*)
   b. The test results are clinically important. (*significant*)
   c. Immigration is a very important issue in this country. (*correct*)
   d. At the moment, we've more *significant* things to discuss than scheduling. (*important*)
   e. The difference is statistically important. (*significant*)

Teaching Synonymous Verbs: Demand, Request, and Require

Corpus queries and analyses

To distinguish synonymous verbs often requires us to examine their typical object and subject collocates as well as their common modifying adverbs. Because *demand* and *request* can each also be used as a noun, a simple "[nn*] [demand]"/"[nn*] [request]" query for find what subject nouns are used before each verb would generate many irrelevant tokens where *demand/request* are each used as nouns, such as *market/oil demand* and *budget/information* request. So we have to go through the results and eliminate the irrelevant tokens. This is another example showing the

complexity involved in corpus queries. Despite the complexity challenge, a careful query and scrutiny of the typical subjects, objects, and modifying adverbs of the three verbs will reveal that while they all can mean "ask for," the verbs differ quite noticeably in agent (subject), theme (object), and manner (shown by their adverbials), as well as in the structural type of their objects.

Concerning the most typical (top ten) subject nouns of each verb in COCA (reported in Table 3), those of *demand* are mostly humans/human institutions (e.g., *students/nations/Congress/protesters*) although the verb also takes non-human subjects (e.g., *situation*). The fact that human nouns like *students/citizens/protesters* often serve as the subjects of *demand* suggests that the verb is frequently used for situations where individuals are making demands to authorities. In comparison, the subjects of *request* are exclusively humans/human institutions (e.g., *students/administration/stores*; *store* used as the subject of *request* refers to the owners/employees of the store, not the physical facility). In contrast, the subjects of *require* are mostly nonhuman nouns (*laws/rules/regulations/tasks*), although a few (e.g., *states*) are human institutions. These findings suggest that *demand* is similar to *request* in the sense that their subjects are mostly human, but *demand* is sometimes used like *require* when taking nonhuman subjects. However, we need more information to more clearly define their differences.

Table 3: Ten most frequent subject nouns of *demand/request/require* in COCA

Demand			Request			Require		
Subject Noun	Frequency	MI	Subject Noun	Frequency	MI	Subject Noun	Frequency	MI
student(s)	138	7.25	*students(s)*	39	3.57	law(s)	1,365	6.90
government(s)	113	6.37	administration	38	5.81	state(s)	411	3.41
society	102	6.52	parent(s)	35	4.57	rule(s)	345	5.74
situation(s)	102	5.47	President	28	3.17	program(s)	294	4.09
nation(s)	93	4.81	store(s)	25	4.92	regulation(s)	272	7.15
official(s)	75	6.82	Bush (president)	24	4.34	system(s)	267	3.98
investor(s)	65	8.12	client(s)	23	5.75	job(s)	225	4.06
citizen(s)	64	6.83	teacher(s)	23	3.95	progress	207	4.35
Congress	55	9.46	department(s)	21	4.35	task(s)	204	5.89
protester(s)	40	6.02	company(ies)	20	3.03	legislation	173	6.78

In terms of the most frequent object nouns of the verbs (reported in Table 4), there are a few important points worth noticing. Except for three nouns that appear on the lists of two of the verbs (i.e , *attention* and *change(s)* appearing on the lists of both *demand/require* and *money* on the lists of both *demand/request*), the most common objects of each verbs are unique. First, while quite a few nouns of *demand* relate to legally/ethically right things to do (*justice/respect/accountability*), most of the nouns of *request* concern assistance from others (*permission/assistance/help*). On the other hand, the most common nouns of *require* are humans (*students/employers/teachers*, which are each followed by an infinitive, e.g., *requires students to write a paper*). The results also suggest some similarity between *demand* and *request*, for both may take concrete nouns (such as *money/payments*) as their objects. There is also some similarity between *demand* and *require*, as both share some abstract object nouns, such as *attention/changes*. When having such abstract nouns as their objects, *demand/require* are used in the sense of *need*, e.g., "These issues *demand/require* attention"="These issues *need* attention". Given that what is often *demanded* is something rightful (at least from the perspective of the person/persons making the demands), the verb *demand* appears to be the strongest of the three in terms of the intensity involved. *Request* is the weakest because what is typically requested is assistance from others. *Require* is unique in the sense that its typical subject is a law/rule/regulation or an agency in charge of implementing the law/rule/regulation; as a result, what is *required* is often something official that one has to do or provide with no room for negotiation or exception.

Table 4: Ten most frequent object nouns of *demand/request/require* in COCA

Demand			Request			Require		
Object Noun	Frequency	MI	Object Noun	Frequency	MI	Object Noun	Frequency	MI
*attention**	138	7.25	anonymity	222	13.81	student(s)	491	5.68
answer(s)	113	6.37	permission	142	11.53	state(s)	216	3.72
action(s)	102	6.52	information	140	7.59	company(ies)	170	4.57
*money***	102	5.47	assistance	77	9.62	employer(s)	166	8.26
*change(s)**	93	4.81	help	52	5.12	school(s)	149	3.73
justice	75	6.82	comment	21	6.48	*attention**	113	5.59
payment(s)	65	8.12	copy	18	7.13	*change(s)**	104	3.60

(continued)

Demand			Request			Require		
Object Noun	Frequency	MI	Object Noun	Frequency	MI	Object Noun	Frequency	MI
respect	64	6.83	document	18	6.50	knowledge	101	5.78
accountability	55	9.46	data	18	5.27	teacher(s)	98	4.50
access	40	6.02	*money*	17	4.17	patience	92	8.61

* An italicized word with one * also appears on the noun list of "require."
** An italicized word with two ** also appears on the noun list of "request."

A query of the typical modifying adverbs of the three nouns also confirms these findings about the semantic/usage patterns of the three verbs. Due to space limit, I will just report the main findings related to the modifying adverbs. While all three verbs share some additive/frequency/time adverbs (e.g., *also/often/never*), they each have their own unique adverbs that help divulge their meanings: *publicly/angrily/loudly demand*; *formally/politely/respectfully request*; and *constitutionally/legally require*. Furthermore, a close reading of the concordance lines of the verbs also indicates that while *request/require* are sometimes used in the *Verb+Noun+Infinitive* structure (e.g., *request/require students to write an essay*), *demand* is never used (i.e., cannot not be used) with this structure (i.e., we generally do not say **demand someone to do something*). Instead, *demand* is often used in the *Verb+That-clause* structure (e.g., *demand that the city government keep the bus service*). The above analysis and findings should help learners attain a good understanding of the semantic/usage patterns of each of the three synonymous verbs. However, to help learners reinforce their learning, teachers can develop useful exercises based on the corpus findings, such as the following.

Sample learning activities

(1) Exercise 1: Decide whether *demand*, *request*, or *require* fills in each blank the best semantically; if you believe more than one words may work equally well, write them down.
   a. The law _____ that at least one parent/guardian be notified before an abortion. (*requires*)
   b. Many demonstrators held a rally to _____ free elections in this country. (*demanded*)
   c. Most knee problems don't _____ surgery. (*require*)
   d. I'd like to respectfully _____ that you support my candidacy for the office. (*request*)
   e. This crisis _____ immediate attention. (both *demand* or *require* work)

(2) Exercise 2: Decide whether *demand*, *request*, or *require* may best replace each underlined word while keeping the original meaning and tone of the sentence.
   a. Teachers should help students learn how to ask for help. (*request*)
   b. To the best of my knowledge, the Saudi government invited, indeed, asked American troops to come into Saudi Arabia. (*requested*)
   c. In the lawsuit, they asked for the payment of $2.5 billion as compensation for the use of water from the Alto Lerma Canal from 1970 up to that moment. (*demanded*)
   d. This task needs time and effort. (*demands* or *requires*)
   e. An 1891 federal law asked that goods be marked with their country of origin. (*required*)

(3) Exercise 3: Some of the underlined uses of *demand*, *request*, and *require* are incorrect. Identify and correct them. Then translate the sentences into Mandarin.
   a. Beijing demanded that the Sudanese government implement the resolution. (*correct)*
   b. The airplane, low on fuel, has required permission to land in Caracas. (*requested*)
   c. The procedure requests patience and self-control. (*demands* or *requires)*
   d. The angry demonstrators requested that the government release their leader. (*demanded*)
   e. All three tests demand students to use more than content knowledge. (*require*)

Teaching Related Verbs: Doubt and Suspect

Corpus queries and analysis

Unlike all of the above examples, *doubt* and *suspect* are not synonymous. In fact, they are actually antonyms (i.e., having opposite meanings) in English. They are listed as related verbs here simply because they are translated into the same word in Korean and some other Asian languages. Because of the nature of the two words in English, examining their typical collocates will not help reveal their semantic difference, for they can be placed in the exactly the same linguistic context: "I *doubt/suspect* he is a spy." Yet, which of the two verbs is used completely changes the meaning of the sentence: the use of *doubt* will mean "I tend not to believe he is a spy," while the use of *suspect* will mean I tend to believe he is a spy.

To identify this semantic difference will require the examination of the context beyond the utterance, often the discourse immediately before the utterance. Here are two examples adapted from COCA:

a. He has been absent from the Senate lately and his appearance has changed so much. I *doubt* that many of his colleagues would recognize him unless he wore a name tag.
b. He has had short breaths for quite sometime. Doctors *suspect* he has a congenital heart block.

In Example a, the sentence before the "I *doubt*" utterance makes clear that the "he" senator has been absent for a while and his appearance has changed a lot. So it follows that the speaker "I" tends not to believe (hence the verb *doubt*) that many of the senator's colleagues would recognize him. *Suspect* would not work in the context, as it would mean the speaker believes the senator would be recognized by his colleagues. In contrast, in Example b, the first sentence states that the "he" person has had short breaths for quite sometime; hence it is logical for doctors to believe (*suspect*) the he has a heart blocking problem from birth. *Doubt* would not work here because the use of it would mean that the doctors tend not to believe the person has a heart problem. Teachers can have students read and analyze such corpus examples in class so as to help students better understand the difference between the two verbs. Teachers can also use corpus data to develop exercises for students to practice and learn the use of the two verbs. The following are some examples.

Sample learning activities

(1) Exercise 1: Fill in each blank with either *doubt* or *suspect* based on its discourse context.
   a. She said that she didn't know anything but I _____ she actually knew. (*suspect*)
   b. The meeting was supposed to be an hour, but I _____ it was actually that short. (*doubt*)
   c. If you know or simply _____ any illegal practice is going on, you should report it to police. (*suspect*)
   d. As a matter of fact, I'm feeling scared. I _____ we are at a very dangerous point. (*suspect*)
   e. Some say it's a good time to invest in stocks. I _____ it because the economy is still in a deep recession. (*doubt*)

(2) Exercise 2: Decide whether *doubt* or *suspect* can replace each underlined

phrase while keeping the original meaning of the sentence.

a. These are the things in her life that I would like to think she doesn't want others to know about. (*suspect*)
b. He lives in a dream world now, all alone, and I have trouble believing that he can distinguish between what is real and what is not. (*doubt*)
c. She murdered her first husband. When her second husband died, the police immediately considered the possibility that she killed him. (*suspected*)
d. He didn't believe her story because he was inclined to think she was not telling him the truth. (suspected)
e. He said he missed the class because he was sick, but his teacher was not included to believe his story. (*doubted*)

(3) Exercise 3: Some of the underlined uses if *doubt* and *require* are incorrect. Identify and correct them. Then translate the sentences into Korean.

a. You've helped edit my paper so well that my teacher may doubt that someone else wrote it for me. (*suspect*)
b. He says it took him just an hour to complete the essay. Yet she suspects it took him at least twice as much time. (*correct*)
c. Tom has lied many times before. So I suspect he's telling the truth this time. (*doubt*)
d. Russian President Putin and his wife haven't appeared together for quite sometime. Some doubt they've been divorced. (*suspect*)
e. He often tells the teacher what we say and do, so we all doubt that he told the teacher about our plan to pretend sick this time. (*suspect*)

CONCLUSION

Drawing on existing research, this paper has shown that the semantic/usage differences among synonyms are best manifested by their typical distributional patterns (especially their typical collocational patterns) and that corpus analysis of such distribution information can often effectively differentiate synonyms and help L2 learners better grasp their semantic/usage patterns. Corpus-based/driven learning also provides learners with excellent discovery learning opportunities and ample authentic language input. Using specific examples, this paper has also illustrated how corpus analysis and its results can be used to help learners grasp difficult-to-distinguish L2 words that are undifferentiated in learners' L1. Of course,

the learning activities and exercises given are meant only as examples. Many other types of activities and exercises can be developed.

It is also important to reiterate that, because corpus analysis of the semantic/usage patterns of synonyms is often complex and labor-intensive, using the approach in teaching can be very challenging. Hence, generally, teachers should not involve students (except for those with an upper-intermediate or up language proficiency) in direct corpus queries. When engaging upper-level students in direct corpus queries and analyses, the teacher should, however, provide them with adequate training and guidance on query and analysis procedures, using as many specific examples as possible (Liu, 2010b, 2011; Liu & Jiang, 2009). Without such training, students can easily become frustrated. To help students succeed in their corpus queries and analyses, the teacher can have them work in groups, as group work has been found to be effective in corpus-based learning (Liu, 2010b, 2011; Liu & Jiang, 2009). For low and intermediate-level students, the teacher can do the query before class and give students screened results of the query for them to analyze. Or, if the corpus query for the usage patterns of a given set of synonyms is fairly simple and straightforward, the teacher can have students do the query together in class and provide whatever guidance and assistance that is necessary. Finally, while it is important to be fully aware of the challenges, it is equally important not to let the challenges stop us from trying this corpus analysis-based approach because the potential benefits of this teaching practice appear to be too great for us not to use it.

Notes

1. According to many linguists, true synonyms are extremely rare unless cross-dialect synonyms are considered (Edmonds & Hirst, 2002; Stubbs, 2001; Taylor, 2003). In other words, all synonyms are really near-synonyms. For the sake of simplicity, however, we will use the only term "synonym" in the rest of the paper.

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Part III

Developing Useful Corpus-Based Vocabulary Lists for Learning and Teaching

Chapter 15

A Corpus Study of the Most Frequently Used Spoken American English Idioms and Its Implications for Material Writing and Teaching

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INTRODUCTION

Because of their rather rigid structure, quite unpredictable meaning, and fairly extensive use, idioms are "a notoriously difficult" but simultaneously very useful aspect of English for ESOL learners because a grasp of them "can be a great asset to learners in acquiring a new language" (Celce-Murcia & Larsen-Freeman, 1999, p.39). How to help students acquire idioms has long been a challenge to ESOL educators and researchers alike.

One of the first issues to consider in idiom instruction is which idioms to teach and in what sequence. Many English idiom teaching and reference materials exist for ESOL learners, some of which claim to cover essential idioms. Yet the selection of idioms in these publications often reflects primarily the authors' intuition rather than any empirical data, and a substantial number of them are rarely used. Thus learning these idioms not only is difficult but may also be unhelpful because students rarely encounter and use them. In addition, these materials cover many seldom-used idioms but fail to cover some frequently used ones. Determining the most useful idioms for ESOL students is therefore important. Because idioms are register sensitive, any most useful idiom list must have a specific group of learners and a register in mind. This article reports a corpus study aimed at identifying the most frequently used spoken American English idioms for college and other professional ESOL students learning American English and uncovering some of the idioms' usage patterns.

BACKGROUND

Definitions of Idiom

In any idiom research, an important yet difficult initial question is, What constitutes an idiom? The definition of idiom varies considerably from scholar to scholar and may also depend on context. As Moon (1998) puts it, "Idiom is an ambiguous term, used in conflicting ways" (p.3). For some scholars, and in a broad sense, the term is rather inclusive, covering, among other things, all fixed phrases, proverbs, formulaic speeches, and, at the extreme, even single polysemic words. For example, scholars such as Cooper (1998) and Katz & Postal (1963) have included as idioms individual words that are used metaphorically, such as *weigh* as in *weigh a decision*. Yet for other scholars, and in a more restrictive use, the term *idiom* is a much narrower concept referring only to those "fixed and semantically opaque or metaphorical" expressions, such as "*kick the bucket* or *spill the beans*" (Moon, 1998, p.4).

What constitutes an idiom is thus often a decision at the discretion of the researcher. For this reason, Tabossi & Zardon (1993) contend that "idioms are multifaceted objects, whose study requires various viewpoints and different methodological approaches" (p.145). Therefore, for any researcher, the task of "identifying idioms is simply an attempt to differentiate and label one class of common expressions with specific functions from others on the bases of criteria which strike the analyst as being the most illuminating," and, for that reason, different "analysts will come up with somewhat different criteria and different identifications" (Fernando, 1996, p.40).

Whatever definition and criteria one develops and uses in identifying idioms, they must be clear, specific, and systematic. An example is Fernando's (1996) definition: "conventionalized multi-word expressions often, but not always non-literal" (p.1). This definition excludes single words as idioms, which, as previously mentioned, some scholars have included. (See Cowie [1998], Stubbs [2001], and Wray [2002] for interesting and rather comprehensive analyses of formulaic language from different perspectives. The scope of their studies is much broader than Fernando's, however, for they cover almost all types of collocations. As a result, many of the types of phrases in their discussions are not idioms, even in the broadest definition.) Fernando also focuses on the invariant or restricted variant nature of idioms to help distinguish them

from other habitual collocations. According to her, only those expressions which become conventionally fixed in a specific order and lexical form, or have only a restricted set of variants, acquire the status of idioms. Combinations, showing a relatively high degree of variability, especially in the matter of lexical replacement such as *catch a bus*, *catch a train*, etc., are not regarded as idioms, though they exemplify idiomaticity by virtue of habitual co-occurrence: *catch* meaning "be in time for" co-occurs usually with a mode of transport, though *catch the post* is also possible (p.31).

While upholding the principles she establishes in distinguishing idioms from non-idioms, Fernando also recognizes the complexity and difficulty of the task. Following previous scholars, she developed a scale system for classifying idiomatic expressions and habitual collocations in which idioms fall into three categories: pure (nonliteral), semiliteral, and literal (see Table 1). Because of its clarity and systematic nature, I adopted Fernando's approach and criteria for idiom identification in this study. In the Method section, I describe how I applied her theory in deciding what expressions to look for in my concordance search of idioms.

Table 1: Three categories of idioms

Category	Examples
Pure	*kick the bucket, pull someone's leg, make off with*[*]
Semiliteral	*fat chance*[*], *use something as a step stone, go through*
Literal	*according to, in sum*[*], *through away*

[*] From Fernando (1996, p.32)

Idiom Acquisition and Corpus Research

Despite the fact that idioms are difficult for L2 learners, historically idiom acquisition has not received adequate attention in L2 research because of what Ellis (1985) considers to be a traditional emphasis on the acquisition of "grammatical systems" (p.5) and neglect of the lexis. Even though second language acquisition researchers are paying greater attention to lexis, most idiom-related studies have still focused on L1 (especially children's) idiom comprehension and acquisition (Cacciari, 1993; Cacciari & Levorato, 1989; Cacciari & Tabossi, 1988, 1993; Gibbs, 1986, 1987; Levorato, 1993; Levorato & Cacciari, 1995). However, since the late 1980s, and especially since the late 1990s, a few studies in L2 have appeared (Abdullah & Jackson, 1998; Cooper,

1998, 1999; Irujo, 1986a, 1986b, 1993). These studies examined how ESOL students comprehend, learn, and use idioms, and helped identify some of the special difficulties ESOL students encounter in learning idioms and the distinctive processes they employ in such learning. However, none of these studies has looked at the important question of which idioms ESOL students should learn first, a question whose answers may lie, in part, in the study of the frequency and patterns of use of English idioms. Fortunately, this latter issue has gained some attention in applied linguistics, thanks largely to advances in corpus linguistics.

A few extensive, corpus-based studies (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Francis, Hunston, & Manning, 1996, 1998; Hunston & Francis, 2000; Moon, 1998) have examined partially or exclusively idiom use in English. Based on a thorough analysis of the Longman Spoken and Written English Corpus, which includes over 40 million words, Biber, et al.'s work is arguably the most comprehensive single-book corpus study so far on English grammar and usage. It contains small sections on idioms and phrasal verbs and offers, among other things, a brief discussion and short list of the most frequently used idioms. Their analysis shows that idiom use is register sensitive and more common in fiction and conversation. Furthermore, they find pure idioms to be rare in general, fewer than one per million words. Yet because their work is a comprehensive study of grammar, its coverage of idioms is rather limited, and it offers only rather selective information on idiom use. Francis, et al.'s (1996, 1998) Cobuild grammar patterns have also uncovered many interesting idiomatic usage patterns, but because they are grammar references, the focus of their discussions is not idioms per se. The same is true of Hunston & Francis's (2000) theoretical treatise of pattern grammar.

Unlike the above studies, Moon's (1998) is devoted exclusively to the use of idioms and fixed expressions in English. Using primarily the Oxford Hector Pilot Corpus, with 18 million words, Moon systematically and thoroughly analyzed various important aspects of these distinct English expressions, including the definition, frequency, grammatical structure, variation, meaning, and discoursal functions of idioms. In addition to finding that pure idioms are very rare across the board, Moon (1998) found that, although idioms of "situational formulae and conventions feature more strongly in spoken discourse" (p.72), pure idioms are more likely to appear in written discourse. Moon also found surprisingly significant variations in the forms of idioms: "Fixedness is a key property of FEI [fixed expressions

and idioms], yet around 40% of database FEIs have lexical variations or strongly institutionalized transformations, and around 14% have two or more variations on their canonical forms" (p.120). Some of the variations, especially grammatical or structure-dependent variations, are very systematic, whereas others, especially those that are register dependent, are less so. Moon also discusses in detail the different forms of variation in both the systematic and the less systematic categories, such as verb variation (e.g., *up* or *raise the ante*), particle variation (e.g., *by* or *in leaps and bounds*), and truncation (e.g., *a bird in hand* without the rest of the phrase *is worth two in the bush*).

Applying Idiom Research to Teaching

The idiom studies described above focused on general issues regarding idiom use in English, primarily in written British English. They did not investigate the issues of principal concern for English language teaching, that is, the most frequently used idioms in spoken American English and idiom use patterns.

An important reason for developing corpus-based idiom lists is that, based on my research, including brief informal interviews with the authors of some of the existing idiom teaching and reference materials, the idioms in these publications were selected based primarily on the authors' intuition rather than empirical data. Intuition alone is particularly problematic for identifying idioms because some idioms are regional; even when one's intuition is correct, the selected idioms may be specific to one region. As a result, these teaching materials and references may include many seldom-used idioms, on the one hand, but leave out some frequently used ones, on the other. For example, some low- and intermediate-level books contain such rarely used idioms as *cop out* and *be on cloud nine* but exclude such frequently used idioms as *come up (with)* and *as of*.

Corpus-based research appears to be a good way to address this issue because, as Biber, Conrad, & Reppen (1994) point out, corpus linguistic analyses "are based on naturally-occurring structures and patterns of [language] use rather than intuitions and perceptions, which often do not accurately represent actual use" (pp.169–170). The use of naturally occurring language data is especially helpful and productive in examining use frequencies of language structures and lexical items. The findings of Biber, et al. (1999), Coxhead (2000), Francis, et al. (1996, 1998), and Moon (1998) provide helpful support in this regard.

Despite their usefulness for teaching, results obtained from corpus-based

research cannot be considered the only relevant source of information on what to teach. Although such frequency studies may offer such valuable information as the most accurate count of the use of linguistic items, L2 professionals cannot ignore the importance of teaching — even to low-level students — some of the items that fail to make the list because pure frequency often leaves out some important and useful items in lexical lists. Moreover, interpreters of the results of corpus students should determine whether the corpus employed is representative of the type of language that is relevant for its purpose (Biber, 1993; Coxhead, 2000; Kennedy, 1998; Moon, 1998; Sinclair, 1991). Generally speaking, a corpus needs to contain millions of running words (tokens) to ensure that it has enough data to be sufficiently representative (Sinclair, 1991),[1] but a balanced selection of types and lengths of texts (either spoken or written) is equally important. Linguistic features of texts vary significantly from one register to another (Biber, 1989; Biber, et al., 1994, 1998); thus, selecting the register(s) appropriate to one's research interest is crucial (Coxhead, 2000; Simpson & Mendis, 2003). Furthermore, the size and structure of texts chosen must be typical of the register of the researcher's interest (Coxhead, 2000; Sinclair, 1991). A representative corpus should also include as many different texts and as many authors or speakers as possible to avoid data distortion caused by a few individuals' personal styles.

The research reported here sought results that could inform English language teaching, with emphasis on the spoken language, by identifying the most frequently occurring idioms across three large corpora samplings from spoken American English in a variety of situations. Having identified these idioms, I related their frequency, association to registers, variations from the canonical forms, and tense (of idioms that function as verbs) to the findings of previous idiom studies.

METHOD

The Corpora

In view of my focus on spoken English, I used three corpora containing transcribed spoken language (see Table 2): (a) Barlow's (2000) Corpus of Spoken, Professional American English (CSPAE; hereafter *Professional*); (b) a corpus of spoken American media English (Liu, 2002, compiled with the help of graduate assistants; hereafter *Media*); and (c) Simpson, et al.'s (2002) Michigan Corpus of Academic Spoken English (hereafter *MICASE*). The corpora in combination contain about 6 million

tokens and 72,402 types and constitute, to my knowledge, the largest available spoken American English corpus to date. I also attempted to include a large number of diverse texts (1,111) and speakers (approximately 4,300) to help ensure the representativeness of the corpus.

Table 2: Summary of the corpora

Corpus	Tokens	Types	Texts	Speakers	Text or Transcript Types
Professional	2,000,000	25,658	302	400	Meetings/news briefings
Media	2,100,000	46,234	657	2,350	Variety of TV programs
MICASE	1,848,364	37,975	152	1,571	Variety of school functions
Total	6,000,000	72,402*	1,111	4,321	

Note: Some figures are approximate. * Total is not the sum of the number of types in each of the three corpora as some of the types are found in more than one corpus.

The Professional corpus consists of transcripts of discussions at the meetings of various academic institutions and professional organizations and White House press briefings. The Media corpus includes transcripts of spontaneous talk from a variety of TV programs downloaded from the Web sites of the major U.S. networks: ABC, CBS, CNN, Fox News, and NBC. In compiling this corpus, I followed the corpus design principles discussed above and attempted to include as many different TV programs and topics as possible. The corpus contains such diverse TV programs as news reports, debates, interviews, magazine shows, and talk shows, including ABC's *Nightline* and *20/20*, CNN's *Larry King Live* and *Your Health*, Fox News's *Rita Cosby Show*, and NBC's *Dateline* and *Today*. The last corpus, MICASE, is made up of transcripts of a variety of spoken academic texts, including lectures, advising sessions, office hours, class discussions, and colloquia.

All three corpora are made up of contemporary, everyday, semiformal spoken American English (not casual or very formal speech; for a sample spoken text, see Appendix I), an important characteristic given that idioms are one of the most time-sensitive aspects of language. I limited my study to spoken American English because idiom use, like other aspects of language, has shown to be language-variety and register sensitive (Biber, et al., 1999; Moon, 1998). Idioms common in spoken language may not be so in writing and vice versa. As my resources were limited, I believed that a study with a narrow focus would be more feasible and purposeful,

hence maybe more meaningful and productive. The data in the corpora are primarily the type of spoken language students learning American English as an L2 will most likely be exposed to. The three corpora differ somewhat in the formality of the speech they contain. A comparative analysis of the vocabulary in the three corpora using Heatley, Nation, & Coxhead's (2002) Range and Frequency Programs suggests that MICASE is the most formal of the three in vocabulary use: It contained the highest percentage of tokens found in Coxhead's (2000) Academic Word List (7.2%), followed by the Professional (4.9%) and Media (3.2%) lists. The results are consistent with expectations because MICASE is composed of academic speech events such as lectures and colloquia, and the Professional corpus consists of speeches at professional meetings and White House press conferences. In contrast, the Media corpus involves speakers with diverse social and educational backgrounds.

Idiom Identification

I identified idioms using Fernando's three categories (pure, semiliteral, and literal), as discussed earlier. I also included phrasal verbs as idioms because many of them are fixed in structure and nonliteral or semiliteral in meaning (e.g., *fall through*, *give in*, *put up with*). More importantly, these idiomatic expressions often present great difficulty to ESOL students. However, I excluded verb-plus-particle or verb-plus-preposition structures that most grammarians would not consider phrasal verbs.

To determine whether a verb-plus-particle structure was a phrasal verb or not, I used criteria agreed upon by many linguists: (a) whether an adverb may be inserted between the verb and the particle (phrasal verbs do not allow such insertion), (b) whether the particle can be forefronted in a sentence (phrasal verbs do not allow such forefronting), and (c) whether the meaning is completely literal (phrasal verbs are often not completely literal in meaning) (Celce-Murcia & Larsen-Freeman, 1999). The application of all these testing principles excludes as phrasal verbs those extreme literal verb phrases that often contain a directional particle, such as *come in*, *go out*, *listen to*, *look at*, and *talk about*. It will, however, include most other phrasal verbs, such as *come across*, *pass out*, and *fall apart*.

I identified idioms in four major contemporary English idiom dictionaries and three English phrasal verb dictionaries: *Cambridge International Dictionary of Idioms* (1998) and *Cambridge International*

Dictionary of Phrasal Verbs (1997), *Longman American Idioms Dictionary* (1999; no matching Longman phrasal verb dictionary was available), *NTC's American Idioms Dictionary* (Spears, 1994) and *NTC's Dictionary of Phrasal Verbs and Other Idiomatic Verbal Phrases* (Spears, 1993), and *Oxford Idioms Dictionary for Learners of English* (2001) and *Oxford Phrasal Verbs Dictionary for Learners of English* (2001). I selected these dictionaries because they were all rather recent publications from major ESOL publishers and claimed to be comprehensive and contain representative idioms and phrasal verbs.[2]

An important criterion in identifying an idiom was how difficult the phrase might be for ESOL students, which often hinges on how literal it is. To help reduce subjectivity in determining the difficulty of an idiom, I considered a fairly literal expression to be an idiom if it was listed in two of the four idiom dictionaries or two of the three phrasal verb dictionaries. In total, the idioms identified numbered 9,683.

Concordance Search

I used the concordance computer program MonoConc Pro 2.0 (2000) to search the Professional and Media corpora separately for the 9,683 idioms identified. I searched the MICASE using the search tool provided on the MICASE Web site. I compared and then combined the results of the three corpora to develop the idiom lists and uncover use patterns. I considered the various forms of an idiom as one idiom (e.g., bring someone up to *date/speed*, *in/with* respect to), but searched for the forms one at a time. For example, to search the frequency of the idiom *to bring someone up to date/speed*, I entered the following four separate entries: *bring*** *up to date*, *brought** *up to date*, *bring*** *up to speed*, and *brought** *up to speed*. Thus the total number of items searched for would have been much higher if I had counted each form of an idiom separately.

While searching for the most frequently used idioms, I also looked for noticeable usage patterns, especially those that were either not covered or erroneously presented in existing idiom teaching and reference materials. Because the results generated by the concordance search included some expressions that did not exemplify the idiom use I had intended, I often read the results one by one. For example, the search for *kind of* or *sort of* as an idiom expressing *somewhat* or *in a way* also yielded examples of its use as a noun phrase with *of* as a preposition, such as *this kind/sort of book*. Similarly, searching for the idiom *go after*, meaning *pursue someone in order to catch him or her*, also

generated examples of the literal meaning *move after someone in sequence.* The analysis of the features and patterns of idiom use in general also demanded a close reading. Finally, because the MICASE online search tool allowed neither Boolean searches with *or* nor the use of truncated wildcard characters (*), the search of this corpus was much more laborious than expected.

FINDINGS

My search resulted in four lists of most frequently used idioms, one for each of the three corpora and one for the combined corpora. In addition, I made observations about the frequency of the idioms relative to the total number of words searched, their association to registers, variations from canonical forms, and the tense of idioms that function as verbs.

Most Frequently Used Idioms

I tabulated four separate lists of the most frequently used English idioms found in the concordance search: one based on the entire data set (see Column 1 of Appendix II) and the other three based each of the three corpora (see Columns 2–4 of Appendix II). In addition to meeting the criteria outlined above, each selected item (following Coxhead, 2000, on frequency and range) occurred at least 12 times in all three corpora combined (i.e., two tokens per million words).

Setting a frequency level of two tokens per million meant that the idioms belonged, at least, to what Moon (1998) classifies as the lowest band of the medium-frequency idioms. I excluded any item that fell into Moon's (1998) two lowest frequency categories: low frequencies (less than one to two tokens per million) and insignificant frequencies (zero to four tokens in the entire corpus).

In terms of range, the four lists included only the 302 items that were listed in at least two of the major idiom dictionaries used to guide the concordance search and occurred in at least two of the three corpora so as to reduce the possibility of inflated results by one speaker, text type, or topic. Excluded from the lists were 13 items that met the frequency criteria but failed the range test. I classified the 302 idioms into three frequency-of-use bands representing 50 or more, 20–49, and 2–19 tokens per million words (see Table 3 for a comparison of these bands with Moon's, 1998). These classifications are rather arbitrary and are intended merely as a reference, not a guide, for ESOL teachers and learners to consider in

selecting idioms for study.

All the idioms in the three corpus-specific lists in Appendix Ⅲ also occur in the overall list. To reduce the possibility that the idiom use of individual speakers or texts might inflate the results, I did not include in the sublists idioms that did not meet the criteria for inclusion on the overall list. A comparative analysis of the four lists shows a rather strong convergence in the idiom selection. Of the 302 idioms in the overall list, 283 appeared in all three sublists. Of the 19 that did not, 7 failed to make the Professional list and 12 the MICASE list. All 302 idioms in the overall list occurred in the Media list, suggesting that the Media corpus is the most balanced of the three, which, I believe, is due to the large number of speakers and the broad range of topics it involves.

Frequency

The results of this study support previous findings that pure idioms are rare. Moon (1998, p.64), for example, found that few such idioms occur with a frequency greater than one per million words. Similarly, Biber, et al. (1999, p.1025) detected a few with a frequency greater than five per million words. I also found few with a frequency of more than two per million words. This finding is most evident in the fact that only a few such idioms made the compiled list, such as *ballpark estimate*, *the ball is in your court*, and *right off the bat* — mostly sports-related idioms. Even these few are all in Band 3, the lowest band, with a frequency of 2–19 per million words.

Table 3: Three bands of the most frequently-used idioms in the corpora

Band	Number of Items	Frequency (tokens per million words)	Comparable Frequency Band in Moon (1998)
1	47	50 or more	VIII (high)
2	50	20–49	VII (high medium)
3	205	2–19	V and VI (medium)

Variations in Register

The findings also support previous findings that idioms are register sensitive (Biber, et al., 1999; Moon, 1998). For example, the multiple-meaning phrasal verb *to come up* (meaning also *to appear* or *be mentioned*) is used far more frequently than *come up with* in the Media corpus (398 : 159

tokens, 255%) and more in the Professional corpus (392 : 242, 160%), but the opposite is true in MICASE (153 : 222, 69%). A plausible explanation is that college students are often asked to "come up with" answers and solutions to various problems presented by their textbooks or by their professors and peers in class.

Another example of the register sensitivity of idioms is the informal idiom *to hang out (with)*, with 8 tokens in the Professional corpus but 26 and 40 respectively in the Media corpus and MICASE. What is more, almost 70% (27:40) of the tokens in MICASE appeared in the 4 least formal (of 16) genres — Tour, Study Groups, Labs, and Office Hours — but none occurred in the 7 more formal categories, such as Presentations, Interviews, and Colloquia.

Variations in Form

An analysis of the idioms identified in spoken American English also corroborates Moon's findings (1998) about how idioms vary in form. Context-dependent variations are either what Moon (1998) terms "truncation" (p.131), the shortening of an idiom, or the conversion of the parts of speech of the idiom. Based on my data, the context of an idiom often makes its truncation possible. An example relates to the idiom *to bring someone up to date* (or *up to speed*) *on something*, meaning to update someone about something. At a U.S. White House press briefing, a spokesperson made the following remark:

> So this is to bring him [President Clinton] up to speed on all the details of the schedule. Certainly he's got a number of multilateral meetings to prepare him for the substance of those meetings so he can have thoughtful, meaningful conversations just to continue to *bring him up* [italics added]. (Professional Corpus, Barlow, 2000)

The truncation of the second *to bring him up to speed* to *to bring him up* will not be interpreted as *to rear him* because the context makes such an interpretation impossible.

An example of the parts-of-speech-conversion type of context-dependent variation is found in the following question in the Professional corpus: "How long would it take, *ballpark* [italics added], for it to work its way up through to the Supreme Court before we get an answer?" (Barlow, 2000). The word *ballpark* is listed in all dictionaries as either a noun or an adjective in its idiomatic use, but the listener cannot miss its meaning

when used as an adverb in this sentence because of the discourse context.

Meaning-related variants can be divided into three subcategories: *meaning dependent*, *meaning extension*, and *hyponym exchange*. The alternate use of *in the long run* and *in the long term* and the counterpart pair, *in the short run* and *in the short term*, provides an example of meaning-dependent variation. The corpus analysis shows that U.S. speakers strongly prefer *in the long run* over *in the long term* (35 vs. 12 tokens, respectively, a ratio of approximately 3:1), but they tend to prefer *in the short term* over *in the short run* (12 vs. 6 tokens, respectively, a ratio of 2:1). Such a variation seems to suggest that to most U.S. speakers, a *run* appears longer than a *term*.

An example of meaning extension is the use of the expression *ballpark idea*: "you can start out with these few observations of conductivity to give you a *ballpark idea* of what, what it, what it could be at the site and how it might vary" (MICASE, Simpson, et al., 2002). *Ballpark idea* here means general idea, obviously derived from the idiom *ballpark figures*. In substituting the noun *idea* for *figure* or *number*, the speaker maps the adjective meaning of *ballpark* onto a new conceptual category, *ideas*. Other examples of extension are the remark "Put the ball back in Barak's court" (Media corpus), which a political commentator used in depicting the battle between the former Israeli leader, Ehud Barak, and the Palestinian leader, Yasir Arafat, and in the question a correspondent asked Dee Dee Myers, White House Press Secretary under President Clinton: "On health care reform it seems like the administration now is being very passive and just *putting the ball in the Senate court*" [italics added] (Professional Corpus, Barlow, 2000). The expression *put the ball in someone's court* has apparently evolved from the idiom *the ball is in someone's court*. In terms of structure, the variation represents what Moon (1998) calls verb "variation" (p.124), where an idiom's verb is replaced by another verb. In meaning, the new form has changed from a passive descriptive state — the ball simply being in someone's court — to an action that moves the ball from one location into a new, desired position.

For hyponym exchanges, an example is the expression "slip of the lip" (Media corpus), in which the original noun *tongue* has been replaced by another speech organ hyponym, *lip*. This type of variation differs from that in which a word in the idiom is replaced by another word that is the same part of speech but is not a hyponym, as in "pull a highway [for *rabbit*] out of the hat" or "*join* the Proposition 36 bandwagon" for "*jump on* the bandwagon" (both from the Media corpus).

Tense of Verbal Idioms

The results suggest that certain phrasal verbs appear predominantly in the present tense, whereas others feature substantially more in the past tense. For example, the idiom *go ahead* is almost always used in the present tense in the data set (635 of 645 tokens, or 98%), as is the idiom *make sure* (1,159 of 1,179 tokens). Yet the verbal idiom *leave out someone or something* registers more past tense than present tense uses (51 vs. 34 tokens). Similarly, the phrasal verbs *work out* and *turn out* register a considerable past tense distribution (about one third of their total use). Such information may help ESOL teachers make more informed decisions about when to teach certain idioms. For instance, *make sure* and *go ahead* may be a good focus of instruction during the introduction of the present tense, whereas *leave out* and *work out* may be best practiced during the instruction of the past tense. On the other hand, the use pattern of *in the long/short run/term* mentioned above may also help students learn to use the phrase more idiomatically.

COMPARISON OF FINDINGS WITH TEACHING AND REFERENCE MATERIALS

As one of the goals of this study is to help improve the development of future idiom teaching and reference materials, I compared the findings of my search with the information in the seven dictionaries I used to guide my concordance search and two essential idiom publications: Dixson's (1994) *Essential Idioms in English* and Spears's (1999) *Essential American Idioms*. None of these nine publications is limited to spoken American English or to British or written idioms. Three of the dictionaries (those with *American idioms* in their titles: *Longman American Idioms Dictionary*, 1999; Spears, 1994, 1999) are devoted to American idioms only, and all nine publications contain idioms from both spoken and written English, ensuring that the comparison is basically fair. The comparative analysis unearths some inadequacies in the idiom selection and meaning and usage explanations in these materials.

Inconsistent Selection

The selection of idioms in these materials seems sometimes inconsistent, with some highly frequent or highly opaque items missing but much less frequent and more transparent ones included. For example, one of the essential idiom dictionaries contains the entries *above par*, *all*

over again, and *all right* but not *according to*.[3] Based on my findings, *according to* should be included. In terms of frequency, *according to* occurs far more frequently in my data set than *above par* (533:0). In terms of difficulty level, *according to* appears to be equal to *all over again* and *all right*; all three idioms are rather literal in meaning.

Another example of inconsistent selection is that of the five major idiom dictionaries surveyed (excluding the three phrasal verb dictionaries), only one lists the idiomatic phrase *as of*. The four that omit this phrase include idioms that are either much less common or much more transparent in meaning. Under the heading *as*, one of the four dictionaries lists only *as is*, yet *as is* claims only 16 tokens to the 90 tokens of *as of* in my corpora. Furthermore, *as of* is more opaque in meaning than *as is*. Another dictionary lists under such idioms as *as nutty as a fruitcake* and *as one*. Similar problems are found in the remaining two dictionaries. One records idioms such as *as a duck takes to water* (zero occurrence in the corpora) and *as usual* (very transparent in meaning), and the other lists under *as* only the two idioms *as if* (rather literal despite its high frequency) and *as per usual* (extremely rare with zero tokens in the corpora). One more example of inconsistency in item inclusion is that only one of the five dictionaries includes the highly frequent (among the top band in my list) idiomatic phrase *with/in regard/respect to*. The fairly transparent meaning of this idiom might be the reason for its exclusion, but many of the listed items, such as *with each passing day* and *with a will*, are even more literal. A final example is the inclusion in one publication of such extremely rare idioms as *cop out* and *cut and dried*.

Inadequate Meaning and Usage Explanations

A more important disparity between the publications and the results from this study is that the primary meaning and typical use of an idiom introduced in these publications are not those found in the corpora. A case in point is the verbal idiom *to bring up*. All the dictionaries that list this phrase give *to rear or educate a person (often a child)* as the primary meaning and present the other meaning — *to mention and start discussion of an issue* — as the second or third entry, or as a subcategory within an entry. For instance, in one dictionary, the second entry for *bring something up* gives two definitions: (a) "to move something up from a lower to a higher position" and (b) "to mention a subject and start to talk about it." The concordance analysis indicates that this second meaning constitutes more than 90% (287 of 316 tokens) of the

uses of the phrase, whereas the meaning *to rear or educate a person* accounts for only about 5% (16 tokens), with the rest of the phrase's meanings, such as *moving something up*, constituting the remaining 5%.

Another example is the phrase *as of*, which, as mentioned earlier, is listed in only one of the dictionaries. This dictionary gives the phrase's meaning and use as "used to indicate the time or date from which something starts: *We shall be at our new address as of mid June*," suggesting that the phrase is used with a future event. Yet 43 (47.8%) of the tokens of this idiom in the corpora are in the past tense (e.g., *as of yesterday*), 45 (50%) are in the present or present perfect tense (e.g., *as of now, today or yet*), and only 2 (2.2%) are in the future tense. Such data demonstrate that the phrase is seldom used in describing future events and is mostly (98%) used with past or ongoing events up to the present. Another example is the idiomatic multi-meaning phrase *in place*. Of the two dictionaries that list it as an entry, one does not mention the most frequently used meaning according to the corpora, *prepared/ready or in existence*, giving only the rather literal meaning, "things being in the proper place," and the rarely used figurative meaning, "something being proper and well done."

One more discrepancy between my findings and the materials is that, as discussed earlier, the materials typically do not introduce the variations of many of the idioms. Even when the variations are included, their frequency is not mentioned. Yet often one of the variations is the dominant form. For example, three dictionaries list both *with regard to* and *in regard to* but give no information on their frequency of use. According to the corpora, *with regard to* (92 tokens) occurs almost seven times as frequently as *in regard to* (14 tokens). The difference between *with respect to* and *in respect to* is even more striking, with a ratio of 382:3. A related point is that *with respect to* and *with regard to* are synonymous, yet the number of tokens of the former (382) is more than four times that of the latter (92). Having such information in teaching and reference materials would be helpful to ESOL teachers and students.

CONCLUSION

This corpus study of idiom use has resulted in (a) the development of four lists of the most frequently used idioms in spoken American English, (b) a comparison of idiom use patterns in spoken American English with

those found in previous research, and (c) the identification of discrepancies between the findings and the presentation of idioms in idiom teaching and reference materials. Based on these results, five areas for improvement in the teaching of idioms for ESL learners can be identified.

First, items in the teaching and reference materials, especially in those so-called essential idiom publications, need to be selected in a more rigorous, systematic way, and should be based on authentic language rather than on intuition in order to increase their content representativeness. Similarly, rather than relying on made-up sentences for idiom use illustrations, writers of such materials should use examples from a corpus, as some publishers have reportedly done in some of their dictionaries. Second, these publications should strive to provide more accurate descriptions of the meanings and uses of their items. Third, the publications should include additional descriptive information, such as an idiom's distribution and use frequency, because such information may help students develop a more complete grasp of the idioms or decide to what extent they want to learn and use those idioms. Fourth, ESOL teachers, especially those of low-level students, might want to consult corpus-based lists of most frequently used idioms in selecting idioms to teach, particularly when more objective data on frequency become available. Such consultation may help decrease the chance of having students work on idioms not useful to them at the time of instruction. Of course, frequency and range of idioms should not be the only selection criterion in lexical instruction decisions, a point I elaborate on below. Fifth, teachers may want to include information on idiom variations in their instruction. This will help make students' learning of idioms more complete.

Although this study, and corpus research more generally, contributes to the understanding and selection of idioms for learning and teaching in ESOL or the acquisition of other L2s, it has some limitations. For example, an idiom textbook or dictionary whose item selection is based entirely on a frequency count from a corpus study may not include low-frequency idioms that could be important to some students, such as *call it a day*, an utterance that some instructors use to signal the end of a class or meeting, or *out of the question* (both with fewer than one token in a million words in the corpora). Not understanding the first may result in a student's failure to perform a routine yet important speech act; failing to understand the second may have serious consequences (e.g., mistaking the meaning as *no question* or *no problem*, the opposite of

its actual meaning). Compilers of a textbook or reference that is useful for a specific group of learners thus may have to resort to additional methods to look for item candidates. What may further limit the value of a corpus-based study is the difficulty of finding a corpus that is truly representative of the language use that is the focus of an investigation. Concerning the present study, as stated earlier, the corpora employed may not have been large enough and the criteria for identifying idioms may not have been rigorous enough. The results of the study therefore need to be interpreted cautiously.

Validating the findings of the present study will require studies of substantially larger corpora of spoken American English when such corpora become available. Investigations of written corpora would enable some meaningful comparative analyses between the written and spoken registers. In the meantime, however, the results demonstrate the particular advantages of corpus research in revealing valuable information about American English idiom use that might not be unearthed otherwise. The findings of the study also indicate the need in TESOL to develop more informed and, it is hoped, more effective idiom teaching and reference materials.

Notes

1. *Running words* (*tokens*) refers to the total number of word forms in a text or corpus; *individual words* (*types*) refers to each different word in a text regardless of how many times it occurs.
2. None of these references states explicitly the criteria for selecting items, although the publishers of two (Cambridge University Press and Longman) state that a corpus was used in the selection of usage examples. Neither appears to have used a corpus frequency count for idiom selection.
3. Because it is not the goal of this study to criticize the references, I purposely do not give the titles of the publications referred to in this discussion.

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APPENDIX I

Excerpt from the Corpora

White House Press Briefing by Dee Dee Myers, June 23, 1994, from Barlow's (2000) Corpus of Spoken Professional American English (Excerpt used with permission. For samples from the other two corpora, see the respective MICASE [Simpson, et al., 2002] and TV network Web sites)

MYERS: Following up on a couple of things from this morning — first of all, President Clinton will meet with President Carlos Menem of Argentina at the White House on Friday, June 24th, to discuss a broad range of bilateral and international issues *with a view toward* continuing the close collaboration between the United States and Argentina. The two Presidents last met at the White House in June of '93. There was also great interest in the menu at tonight's Congressional picnic. It is hard-shell crabs.

...

VOICE: We have a new poll out today that shows that 41 percent only of Americans approve of the way the President is handling health care reform; 50 percent of them disapprove of it. What do you think is the problem?

MYERS: Well, I think if you ask people specifically do they support universal coverage, overwhelmingly they do; if they support an employer-based system, the system that we currently have, overwhelmingly they do; if they think the Congress should act now to produce some kind of comprehensive health care reform, overwhelmingly they support that. So I think they certainly support elements of the President's plan. The President is going to continue to fight very hard to get universal health care passed this year.

VOICE: Well, why do you think they don't seem to have confidence in the way he is leading the fight on this?

MYERS: I think millions and millions of dollars have been spent providing misinformation about the President's plan. That's unfortunate. The President, the First Lady, members of the Cabinet and others in the

administration have worked hard to try to counter that, to *put out* correct information, to work with Congress to pass elements of the President's package. I think *things are moving in the right direction* in Congress. We're encouraged by discussions that are happening. *We're a long way from* getting it done, but the President remains confident that he will get a bill on his desk this year that will provide guaranteed private insurance for every American.

VOICE: Senator Dole accused the President of *throwing in the towel* on North Korea. And Senator McCain today said that the President would become a co-conspirator with Kim Il Sung if they continue to reprocess. What is your reaction to those Republican criticisms?

MYERS: Well, I think it's unfortunate. The message we got from North Korea yesterday was encouraging. As the President said, it was a bit of good news. The North Koreans agreed to freeze their nuclear program during a third round of talks. There will be nuclear inspectors there on the ground in North Korea to assure that they meet those commitments. We're moving forward now in planning for a third round of high level discussions with the North Korea, *with an eye toward* resolving the outstanding nuclear issues between the United States, the rest of the international community, and North Korea. Certainly, we're going to *make sure* that we verify along the way. We *look forward to* that dialogue. We hope that it happens.

VOICE: Dee Dee, Senator Dole and the other Senate Republicans in the Senate sent a letter to the President today asking him to join them in repudiating remarks by some in his own party that they say used terms like "fire-breathing," "Christian radical right," and they cheapen our democracy through religious bigotry. Is he going to join them?

MYERS: I'm unaware of the letter. I haven't seen it yet. I mean, certainly the President supports very strongly the principle of religious freedom. But beyond that I haven't seen the letter, so I can't comment.

VOICE: Dee Dee, what do you make of *The New York Times* report that the Russians have been secretly working on chemical weapons? Chernomyrdin didn't know anything about it, but —

MYERS: We're *following up on* that. We signed a memorandum of understanding on this. They were — in which they agreed to provide us with information. We don't believe they provided all the information that they *set forward* — that we need for that MOU. And the memorandum also provides for us to ask for additional information should we think what we receive is insufficient. We're in the process of discussing that with them now.

VOICE: Do we think they're hiding something?

MYERS: We're in the process — we want more information, and so we're *following up*. We're not going to draw any conclusions until we have all the

information we think we need.

VOICE: Dee Dee, the crime bill seems to be stalled at the moment, or at least it was when I left the office. Do you guys have anything to say about that?

MYERS: As you know, the President met earlier this week with House and Senate leaders to discuss the crime bill. He's certainly been working very hard. I think 95 percent of that has been resolved between the Houses, which is substantial progress. There are *a few stumbling blocks*, which as I understand it are being worked out among the members of the Congress right now.

VOICE: Well, they say it's —

MYERS: Well, *it's not up to* me, *it's up to* the members of Congress to decide what the *stumbling blocks* are. I think certainly there are a couple of outstanding issues which they're addressing. I think the President hopes that they reach agreement soon and pass a crime bill and send it to his desk.

VOICE: Some of them suggested that it's *up to* him at this point to *come up with* a solution to the whole racial justice issue and remaining *stumbling blocks*, that it won't happen among them.

MYERS: He discussed it on Friday. I think they're aware of his position. We've certainly worked hard on this crime bill and we'll continue to do that. But I think the *ball is now with the members of Congress* who are *working out* some of the final details. And I just don't have any more on it at this point.

VOICE: Their meeting yesterday fell apart because they couldn't reach a conclusion and said it won't happen without him.

MYERS: I think there are discussions *going on*, on the Hill today, and again the President will remain engaged in this and would like to see something passed.

VOICE: What is he doing today besides — he did some ambassadors fairly early this morning that wasn't on his schedule.

MYERS: It wasn't on the public schedule.

VOICE: Another question on the racial justice issue. What is the President's position on the racial justice issue?

MYERS: He hasn't taken one.

VOICE: Why doesn't he have a position on the racial justice issue?

MYERS: Throughout the discussion of this crime bill, he's laid out specifically what it was he wanted to see in that bill — 100,000 new police officers on the street, things for people to say yes to *as well as* to say no to. *Three strikes and you're out* proposal with specific language. All of those things, all of the provisions that he *laid out* have been included in the bill. Those are the things he fought for, those are the things that have been included. There are other things that members of Congress have added and other things that they've *taken out*. He has not taken — he did not take a position on every item that *came up* throughout this debate.

...

APPENDIX II

Most-Frequently Used English Idioms in All and across the Corpora of Spoken American English (in Order of Frequency)

(**Notes:** The band classification applies only to the overall list. Concerning abbreviations used, "sb" stands for somebody, "sth" for something, "NP" for noun phrase, and "ing" for gerund or present participle.)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Kind of (somewhat, etc.) (***Band 1***)	In terms of	Kind of	Sort of
Sort of (somewhat, etc.)	Deal with	Of course	Kind of
Of course	Sort of	In fact	Go on
In terms of	Kind of	Deal with	Of course
In fact	In fact	At all	In terms of
Deal with	Make sure	Sort of	In fact
At all	Go on	As well	Go through
As well	Of course	Come up	At all
Make sure	As well	Find out	As well
Go through	Come up	Look for	Deal with
Come up	Go through	Go on	Make sure
Look for	At all	Go through	In order to/that
Find out	As well as	According to	Figure out

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Go on (with/ing)	Look for	Go ahead	Look for
As well as	With (in) respect to	Make sure	End up
In a/some way	Get into	In a (some, etc.) way	Make sense
Go ahead	Come up with	In terms of	In other words
In order to/that	In other words	As well as	Get into
Get into	Find out	Put on	Come up with
First of all	First of all	First of all	In a (any, etc.) sense of/that
Come up with	In order to (that)	By the way	Find out
Figure out	Take (the) place (of)	Pick up	Turn out
Put on	In a (some, etc.) way	So far	In a (some, etc.) way
In other words	As (so) far as	Call for	Come up
End up (with/ing/adj)	Figure out	Point out	First of all
According to	Be (have sth) in place	End up	As (so) far as
As (so) far as	Go ahead	Get into	Set up
In a/some etc. sense (of/that)	Put on	Take care of	Used to (verb)
So far	In a/any, etc. sense of/that	As (so) far as	Go over
Point out	Have (sth/nth) to do with	Come up with	Go ahead
By the way	Point out	Turn out	Put on
Take place (of)	Work out	In order to/that	In general

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Pick up	Keep/have sth in mind	As to wh clause/NP	According to
Make sense	As to (wh clause/NP)	Take place (of)	Pick up
Turn out	So far	Used to (verb)	By the way
As to wh clause/NP	To the/some/etc. extent ...	As (so) long as	Point out
Set up	Look forward to	Give up	As well as
With (in) respect to	Follow up on	In a (some etc.) sense ...	So far
(Be/have sth) in place	In general	Set up	Get rid of
Used to (verb)	Make sense	Once again	Have/keep in mind
As (so) long as	Bring up	Get out of	As (so) long as
Work out	Set up	After all	Come on
Have sth/nth to do with	On behalf of	Figure out	As if
Bring up	Put together	Show up	With (in) respect to
Have/keep in mind	As soon as	Be about to	ring up
Call for	On the other hand	No matter wh clause	Go with
In general	By the way	Go after	As to wh clause/NP
Take care of (***Band 2***)	Go with	Bring up	Look up sth in
Go over	End up	In other words	Take place (of)
On the other hand	Call for	Get on	No matter wh clause
Put out	As (so) long as	Work out	Put out

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Go with	Pick up	Be/have sth in place	Take care of
To the/some/etc. extent (of/that)	Get back to	On the other hand	Work out
As soon as	Put out	Put out	Have sth/nth to do with
Put together	According to	As if	Make up (of)
Show up	Get on	Have sth/nth to do with	On the other hand
Get on	Go over	As soon as	For sure/certain
Get rid of	Turn out	Run out of	In time
As if	Go along (with)	Go for	Get out of
Get out of	On one's own	Take on	Show up
Give up	In effect	All of a sudden	To the (a, etc.) extent (that)
No matter+any wh clause	Back and forth	Get rid of	Go for
Look forward to	In time	Go over	As soon as
Once again	With (in) regard to	Put together	Be about to
In time	Call (up)on	Right away	Break down
Get back to	Show up	In charge of	More or less
Take on	Used to (verb)	Call (up)on	Put together
Go for	Be open to (ideas, etc)	Get through	Take out
Be about to	Take on	Go off	Go along (with)
After all	Fill in	As for	Get on

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Follow up on	Rule out	In time	Account for
On behalf of	In advance	Take off	Take off
In effect	Get rid of	Take over	Give up
Go along (with)	Put forward	Be used to NP/ing	Go off
Come on	Get out of	Have/keep sth in mind	No matter wh clause
Be used to something/doing something	In favor of	In effect	Be used to NP/ing
Get through	As if	In public	Run into
Take out	Be used to NP/ing	Look forward to	Break up
Go off	Play/have a role/part in	Make a difference	Turn on
For sure/certain	Take out	Hold on	After all
Call (up) on	In light of	Throw out	Make it
Make up (of)	Take steps	Come by (visit)	Carry out
Back and forth	Be up to sb/sth	Go with	Hold on
Go after	Take advantage of	To the (some, etc.) extent	Take over
Carry out	Take care of	For sure/sure	Hang out (with)
Make a difference	Get through	Carry out	Back and forth
Have/play a part/role (in)	Down the road	Get back to	Get back to
Take off	Carry out	Take advantage of	Be up to sb/sth

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Right away	Go for	In favor of	Play/have a role/part in
Take advantage of	In the (sb's) interest (of)	Take out	Make a difference
Run out (of)	Leave out	In sb's (the) view (of)	Right away
In favor of	Make up	Go wrong	Get through
All of a sudden	As of	Go/move/be too far	Take on
(Be) in charge (of)	Put up	Make sense	In case
Break down	Regard less	Hold sb/sth accountable	Once again
Put up	Give up	Under way	Stick (be stuck) with
Take over	In touch with	Shut down	Take up
Be open to ideas (***Band 3***)	In someone's view	Put up	Be (have sth) in place
Rule out	Make a difference	Play/have a role/part in	Turn in
As for	No matter wh clause	In general	In effect
Fill in something (or someone on sth)	In charge of	Break up	Regardless of
Be up to sb/sth (depending on sb/sth)	Once again	Make up (of)	All of a sudden
Hold on	Touch on	On behalf of	Fill in
Regardless of	Go off	In sb's (the) interest (of)	In sb's (the) interest (of)
Account for	All along	Regardless of	Rule out
In advance	In case	Come on	Take into account

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
In public	For sure/certain	Go along (with)	Come across
With regard to	Take into account	Do one's best	Come off
Break up (vt/vi)	As a matter of fact	Turn in sth	In common
In case	Take up	Get away with	Get around
In someone's view	First and foremost	For sb's (the) sake (of)	On time
Take up	Up front	At stake	As a matter of fact
In someone's (the) interest (of)	Run into	Out of control	Better off
Take steps	In public	In case	Hand out
Throw out	On time	Take steps	Run through (go over)
As of	Set out	As of	Turn around
Run into	Do one's best	Stick (be stuck) with	As for
Wind up with/in/ing participle	Break down	Account for	Be open to ideas
Stick (be stuck) with	Come on	Break down	In detail
Go/move/be too far	Do one's best	Back and forth	Take advantage of
Look up sth (in)	Wind up	In the long/short run/term	In favor of
As a matter of fact	As for	All along	Rule out
More or less	Stick (be stuck) with	Count on	Keep up with/ing
Leave out sth/someone	Buy into	Keep up	In touch with
Be/keep in touch with	Turn around	Hold up (to endure/be tested)	Leave out sb/sth

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Down the road	Better off	Pay off	Pass out
Turn on sth	Get away with	Turn on	For sb's (the) sake (of)
Make it	Hold someone accountable	Be up to sb/sth	So to speak
Do one's best	Account for	With (in) respect to	Stick to
Turn in sth/sb	Throw out	In advance	Be/go/move too far
All along	In the (a, etc.) fashion (that)	Turn around	Go wrong
On time	Keep up with/doing	Cut down	In sb's (the) view (of)
Turn around (sth/someone)	More or less	Crack down (on)	Screw up
(Be) better off	Live with (accept)	Hang out (with)	Touch on
Keep up (with)	Get around	Set out	Come about
Come by (to visit)	Pass out	Down the road	In public
Get away with	Run out of	Have sth on one's mind	In turn
Hang out (with)	After all	Give someone a break	Bring out
Put forward	Make it	Live with sth (accept ...)	Chances are
Take into account	A fair game	By hand	Do ones' best
In light of	Sign off	Be open to ideas	Up front
Go wrong	Be about to	Follow up on	Shut down

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
For someone's (the) sake (of)	Take off	In touch with	By hand
Count on	Go after	With (in) regard to	Call for
Get around (sth)	Run through (go over)	In sb's (the) interest (of)	Come by (visit)
Set out	In the wake of	More or less	Count on
Shut down sth	Break up	Better off	Get away with
Hand out	Right away	Hand out	Have/get a clue of
Live with (accept/exist with)	All of a sudden	Stick to	Hold on to
Run through something (go over)	Come/go into effect	Bring about	In advance
Touch on a topic/issue	In the long/short run/term	Fall apart	In the long/short run/term
In the long/short run/term	Hand out	In the wake of	Make good on sth
Hold someone/sth accountable	By and large	Get in sb's (the) way (of)	Throw out
Pass out	Have/get a clue	Throw away	Drop off
Stick to	Keep on track	Get to the point	In essence
In common	In turn	Hold on to	In the wrong
(Be) under way	Take over	Cope with	Live with (accept)
Come across (encounter)	Ball park (figure, etc.)	(Can't) get over with	Look forward to
In turn	The ball is in your court	Shut up	All along
Up front (about)	Hold on	At large	As of

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
At stake	In good faith	In control	(Can't) get over with
By hand	After the fact	Take part in	Come to mind
To the (that, this) effect (that/of)	To sb's best knowledge	Take its toll	Go after
First and foremost	On and off	On time	Set out
In the (a, some fashion) (that)	Stick to	Make it	Throw away
So to speak	Bring about	Leave out sb/sth	For that matter
Come about (happen)	In essence	Rule out	Give away
Come off	For sb's (the) sake (of)	Fill in	In charge (of)
Have/get etc. a clue	At stake	Run into	By far
Bring about (make happen)	The big picture	In common	By virtue of
Hold up (to endure or stand testing)	By virtue of	Come about	Down the road
In essence	So to speak	Chances are	Follow up on
Chances are/were	In keeping with	Make good on sth	Get to the point
Cut down (cost, etc)	Live up to	Run through sth	Hold on to
(Get) in the/someone's way	Draw the line	In light of	In sb's (the) way (of)
Pay off	To the contrary	In essence	In (good/bad/etc.) shape
In the wake of	In line with	So to speak	On the whole
Buy into	Off the top of my head	Come/go into effect	Call (up) on

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
By and large	Follow through	In turn	Cut down
Out of control	Up to date	By far	Get/have a handle on
Have sth/be on one's mind	Hold up (delay, etc)	Fill in	The other way around
Keep/be on track	To date	Keep/be on track	On behalf of
Make good on sth	Come across	Get around	As usual
Throw away sth	By hand	Pass out	Bring about
Fall apart	Hold up (to a test)	In a (the) fashion (that)	Buy into
Get to the point	In common	Have/get a clue	For good
In detail	In sb's (the) way (of)	Take into account	Give rise to
On and off (off and on)	So on and so forth	Come across	Make fun of
Come/go/bring into effect	Come about (happen)	First and foremost	Make out
(Can't) get over sth	Shed/cast light on	By and large	To date
Bring out	In sb's (the) eyes (of)	On and off	With (in) regard to
Crack down (on)	Get/have a handle on sth	For that matter	After the fact
Hold on to	Turn in	Be in for (experience)	All out
Turn up	Under way	Above all	Get/grab hold of
By far	In the fore of	Be over one's head	In the/a/etc. fashion (of/that)
To date	Put sth to rest	In private	On and off
Cope with	In due course	Up to date	Right off the bat

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Give someone a break	Bring forward	Shed/cast light on	Shut up
Shut up	Err on the side of	Keep an eye on	Take part in
Up to date	Fall short	Follow through	Take steps
At large	Turn on	Come off	Up in the air
In control	Go wrong	On the verge of	Above all
Follow through	Have sb/sth on mind	Put forward	The big picture
For that matter	In detail	Bring out	Bits and pieces
Shed/cast light on something	Pay off	To date	Break off
Sign off	Fall apart	Take sth/sb for granted	By and large
Take part (in)	Go for it	Take part in	Cope with
Be/put on hold	Up in the air	At sb's (the) expense (of)	Draw the line
(Something as) a fair game	In the event of/that	After the fact	Go for it
After the fact	Get sth across	All over again	In place of/in sb's place
Above all	Take part in	The ball is in sb's court	Take sth/sb for granted
Drop off	By no means	Make fun of	To sb's credit
Up in the air	Hang out (with)	Level playing field	At large
All out	In the wrong	At issue	Ball park figure, etc.
Come to mind	Level playing field	Make up one's mind	Call sth into question
In private	Keep an eye on	Hang in there	First and foremost

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
In the (sb's) eyes of	On the whole	Leave sb/sth alone	Get/have hands on
In the wrong	Take effect	In sb's (the) eyes (of)	Get sth across
Live up to	Bring out	Get/grab hold of	In practice
As usual	Chances are	As usual	Keep/be on track
By virtue of	Crack down	All out	Live up to
The big picture	Come to mind	Up in the air	Make up for
On the verge of	In private	Above all	Shed/cast light on
Ballpark (figure, estimate, etc.)	Call sth into question	Drop off	At sb's disposal
Keep an eye on	To sb's credit	Get/have hand on	At sb's (the) expense (of)
On the whole	On the verge of	In the fore of	Have/get a say/voice in
Screw up (something)	All out	Come across as (appear as)	In control
At the (sb's) expense (of)	Turn up	Put up with	In no way
Be in for (to experience)	By far	Sell out (compromise)	Off the top of one's head
Draw the line	Get to the point	Up for grabs	Rule of thumb
Get/grab hold of sb/sth	On the horizon	In (good/bad) shape	So on and so forth
Be over one's head	Quid pro quo	(Get/be) in sb's (the) way	Up to date
Get/have a handle on sth	Screw up	Screw up	At issue
Go for it	Come off	Sign off	Come/go into effect
In (good/bad/etc.) shape	Come by (visit)	Put sth to rest	Fall apart

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Make fun of	Cut down	At sb's disposal	From scratch
Hold up (delay or hold as hostage)	Make good on sth	Hold up (endure, etc.)	Give sb a break
In line with	Throw away	To the (this, etc.) effect that	In sb's (the) eyes (of)
In the fore of	Above all	Touch on	Pay off
In keeping with	In control	Up front	Put up with
(A) level playing field	At sb's (the) expense (of)	In detail	To the/this/etc. effect (that)
To the contrary	Make up for	Buy into	Turn up
At issue	In the pipeline	Look up (sth) in	At stake
Call sth into question	In practice	To sb's advantage	Beg the question
For good	As usual	Take issue with	Come across as (appear as)
In good faith	Be in for (to experience)	Hit home	Do away with
Get/have hands on sth	Be over one's head	Make/hit headlines	Follow through
Off the top of my head	Get/have hands on	Keep/have an eye on	For real
Put sth to rest	Cope with	For good	Have sth/be on sb's mind
Take its toll	Make up one's mind	In the event of/that	Hit home
All over again	The other way around	Have a say/voice in	In light of
Make up one's mind	In order (in sequence, etc.)	On the horizon	In line with
The ball is in your/their court	Push the envelope	Take effect	In private

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
In the event of/that	Once and for all	Call sth into question	On the verge of
So on and so forth	A rule of thumb	In keeping with	Once and for all
Get sth across	For the time being	Live up to	Quid pro quo
In place of/in someone's place	(Can't) get over sth	By no means	Sell out (comprise)
By no means	At large	To sb's credit	Take issue with
Have/get a say/voice (in something)	Drop off	A fair game	Up for grabs
Give away	Look up sth (in)	By no means	A fair game
Leave something/someone alone	Get/grab hold of	Come to mind	All over again
On the horizon	At issue	Go for it	Be in for
Take effect	All over again	To the contrary	Be over one's head
The other way around	In place of/in sb's place	For the time being	Be/put on hold
To sb's credit	Have a say/voice in	For real	Bring forward
To the (sb's) best knowledge of	Be/put on hold	In the works	By no means
At sb's disposal	Leave sb/sth alone	Be the question	For the time being
Hang in there	Do away with	Push the envelope	In the wake of
Make up for	Give rise to	In the wrong	In the works
Put up with	In no way	The big picture	Leave sb/sth alone
To sb's advantage	From scratch	In line with	Make/hit the headlines

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
Come across as (appear as)	Take sb/sth for granted	In the pine line	Make up one's mind
For the time being	In the works	Make out	On the horizon
Bring forward	In (good/bad) shape	Right off the bat	Out of control
Give rise to	Come across as (appear as)	Break off	Put forward
Make out	Bits and pieces	In order (in sequence, etc.)	To sb's credit
Right off the bat	For good	Beg the question	Err on the side of
Sell out (compromise)	For real	Bits and pieces	Hang in there
Something/things are up for grabs	For that matter	Do away with	Hold sb/sth accountable
Take issue with	At sb's disposal	Give away	Hold up (delay, etc.)
A rule of thumb	Hang in there	In good faith	In keeping with
Bits and pieces	Give sb a break	Make up for	In the event of/that
Do away with something	Right off the bat	On the whole	In the fore of
Err on the side of	Put up with	Once and for all	In order (in sequence, etc.)
Fall short	Take issue with	Rule of thumb	Keep an eye on
For real	Beg the question	Draw the line	Push the envelope
In due course	Break off	Fall short	Sign off
In no way	Come across as (appear as)	In no way	To sb's best knowledge
In practice	Give away	Quid pro quo	To the contrary

(continued)

Overall List	Professional Corpus List	Media Corpus List	MICASE List
In the works	Hold on to	(The) ball is in your court	With (keep) an eye on
Quid pro quo	Out of control	Ball park figures, etc.	
Take sth/someone for granted	Shut up	Bring forward	
In order (in need, get/put house order)	Make fun of	By virtue of	
Break off or break off (something)	Make/hit headlines	Err on the side of	
Beg the question	Take its toll	Get/have a hand on	
From scratch		Give rise to	
Hit home		In due course	
In the pipeline		In place of/in sb's place	
Make/catch/hit headlines		In practice	
Once and for all		Off the top of one's head	
Push the envelope		So on and so forth	
With (keep) one eye on something		The other way around	

Chapter 16

A Corpus Study of the Most Useful Linking Adverbials across Registers and Its Pedagogical Implications

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INTRODUCTION

Linking adverbials (LAs, e.g., *however* and *in contrast*) are instrumental in providing cohesion in both speaking and writing. Understanding the use of these adverbials is very important in language use and learning, especially in second language acquisition. A sound and clear description of LAs in grammar reference books and textbooks is thus beneficial to language users and learners alike. Although many grammar reference books and textbooks have touched on the issue, most of their coverage is not based on corpus data and hence lacks accuracy and reliability. In the past few years, two corpus-based grammar reference books (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Carter & McCarthy, 2006) have appeared and they each render an interesting and informative discussion on the topic.[1] However, because they are comprehensive grammar books dealing with many different topics, their coverage on this issue is not detailed and comprehensive enough, especially regarding the usage patterns of the LAs across different registers. Therefore, there is a need for more detailed and comprehensive corpus-based research on the topic. This paper reports on a study in this endeavor.

TERMINOLOGY CLARIFICATION

Given that various terms have been used to refer to linking devices, a clarification of terminology for the purpose of this paper is in order. The terms that have been used in describing linking devices in English include, among others, "connective adjuncts" (Huddleston & Pullum, 2002, p.775),

"connectives" (Finch, 2000, p.91), "linking adjuncts" (Carter & McCarthy, 2006, p.539), "logical connectors" (Celce-Murcia & Larsen-Freeman, 1999, p.519), "conjunctive adverbials" (Bussmann, 1996, p.95; Celce-Murcia & Larsen-Freeman, 1999, p.522; Kaplan, 1995, p.160), "conjuncts" (Finch, 2000, p.91; Wales, 2001, p.77), "connective adverbs" (Huddleston & Pullum, 2002, p.1319), and "linking adverbials" (Biber, et al., 1999, p.875). The fact that some of the grammarians (Celce-Murcia & Larsen-Freeman; Finch; Huddleston & Pullum) use two different terms, with one of the two referring specifically to "adverbials," suggests that they make a distinction between LAs and other linking devices. [2] A close analysis of the terms mentioned above indicates that the first four, which end with either "adjuncts," "connectives," or "connectors," are generic in nature covering all linking devices including adverbials and conjunctions (i.e., coordinators and subordinators like *and*, *but*, and *although*). The latter four, ending with "adverbials," "adverbs," or "conjuncts" refer only to one group of linking devices — those functioning as adverbials.

The function of LAs is "to make semantic connections between spans of discourse of varying length" (Biber, et al., 1999, p.558, underline added). This ability to connect spans of discourse semantically at different lengths or levels (e.g., clause, sentence, and paragraph) is a key feature that differentiates LAs from conjunctions because the latter can only make semantic connections at or below the clause level. Another difference between the two groups is that while LAs provide only semantic connections, conjunctions offer both semantic and syntactic links at the same time, i.e., they can join two clauses syntactically with or without a comma as shown in "Tom went to work *although* he was sick" or "*Although* he was sick, Tom went to work." In contrast, when a linking adverbial is used to connect the two clauses semantically, a period or a semi-colon is needed, e.g., "Tom was sick. *However,* he went to work" or "Tom was sick; *however*, he went to work." There are a few lexical items, such as *so* and *yet*, that may function both as a conjunction and a linking adverbial. The following examples from Huddleston and Pullum (2002, pp.1319–1320) illustrate the point:

(1) This may make the task seem easier and so increases self-confidence.
(2) You can look as fit as a fiddle and yet feel quite listless.
(3) There was a bus strike, so we had to go by taxi.
(4) The book was written ten years ago, yet conditions are still the same.

It is clear from the context that *so* in (1) and *yet* in (2) are adverbials while

so in (3) and *yet* in (4) function more like conjunctions. It is also important to note that, as shown in examples (1) and (2), LAs and conjunctions can sometimes be used together in the same sentence to emphasize the semantic connection expressed, i.e., the use of the conjunction *and* plus *so* in (1) and the use of *and* plus *yet* in (2). The frequency of such simultaneous use of both types in one sentence may not be very high. Yet beyond the sentence level (e.g., in a passage of a speech or article), it is not uncommon to see speakers and writers use both types to create discourse cohesion.

Of the two types, conjunctions are very small in number and their use is not too complex, especially in comparison with LAs. Therefore, this paper deals with only the latter. The term "linking adverbials" is chosen over "conjunctive adverbials" and "connective adverbs" in this paper for two reasons. First, the word "linking" is clearer and more familiar for the general public than the word "conjunctive." Second, the word "adverbial" is more inclusive than "adverb" because the latter excludes LAs composed of two or more words, such as *in contrast* and *on the contrary*.

THE NEED AND VALUE OF CORPUS-BASED RESEARCH ON LAs

The need for more research on English LAs is two-fold: 1) the importance and difficulty of these items in language use and learning, especially in ESL and 2) a simultaneous inadequacy of coverage of the items in the existing grammar reference books and textbooks. So far, quite a few studies have examined and demonstrated the difficulties ESL learners experience in grasping the use of LAs in writing (Altenberg & Tapper, 1998; Bolton, Nelson, & Hung, 2002; Chen, 2006; Granger & Tyson, 1996; Milton & Tsang, 1993; Swales, 2002). By comparing ESL use of LAs with native English speakers', these studies have found two major problems in ESL students' use of these linking devices. One is overuse (although under-use has also been noticed in some cases) and the other is register-inappropriate use, e.g., using informal colloquial LAs in academic writing. The results clearly indicate the importance of knowing the appropriate register and situational context in which a given linking adverbial may be used.

However, there have been few corpus-based studies on such register-specific usage information, except for the aforementioned Biter, et al. (1999) and Carter & McCarthy (2006). There has also been little research on the coverage of such usage information in ESL textbooks. To the author's

knowledge, Conrad's (2004) is the only study in this regard and her results clearly show the need and the benefit of this line of research. Conrad examined four textbooks' coverage of the most common LAs of contrast and concession (e.g., *though*, *anyway*, and *however*) against corpus findings about these adverbials' usage patterns. Her comparison reveals some noticeable discrepancies. For example, her corpus data show clearly that while *though* can function either as a conjunction or a linking adverbial, it is more frequently used in the latter capacity expressing contrast, concession, or softening of disagreement. Yet three of the four textbooks did not even include *though* in their discussion of contrastive/concessive LAs. The one textbook that did include it mentioned only the contrastive meaning of the adverbial and made no reference about its concessive use. As another example, according to her corpus data, *however* and *on the other hand* are used mostly in academic writing but one of the textbooks recommends them as contrastive LAs for conversational English. Such misleading information from textbooks is certainly detrimental for L2 learning. To help correct the aforementioned problems in reference books and textbooks, more corpus-based research is needed because such research can provide grammarians and teaching material writers with more reliable and accurate information. A more accurate description in textbooks will in turn help language learners and teachers. Finally, new corpus studies on LAs can allow us to test the findings that Biber, et al. (1999) and Carter & McCarthy (2006) report on the issue.

IDENTIFICATION, SELECTION, AND CLASSIFICATION OF LAs

In order to make the list of LAs examined in this study as comprehensive as possible, I consulted the following major English grammar books: Biber, et al. (1999), Carter & McCarthy (2006), Celce-Murcia & Larsen-Freeman (1999), Hallidy (1994), Hewings (2002), Huddleston & Pullum (2002), Leech & Svartvik (1994), Quirk, Greenbaum, Leech, & Svartvik (1985), and Parrott (2000). A list of 110 items in total was compiled based on those found in these grammar books (the list can be found in either Appendix I or II). The corpus used for this study was the British National Corpus (BNC) via the interface developed by Brigham Young University Professor Mark Davies. I searched for the frequency and usage patterns of the LAs first in the entire corpus and then in the following five sub-corpora: 1) Spoken (hereafter the term "speaking" will be used for easier reference), 2) Academic Writing,

3) Fiction, 4) News, and 5) Other Writing (composed of the Nonfiction Misc. and Other Misc. sub-corpora, which include writings on commerce, medicine, religion, etc.). (The methods used for searches and frequency calculation will be discussed below in the next section.) An examination and comparison of the uses of LAs across the five registers should yield useful information for language description, learning, and teaching.

In addition to coming up with a list, a comprehensive and systematic corpus study of LAs also calls for a clear classification of the items on the list. Classifying LAs has long been a very challenging task because of the fact that the discourse semantic relationships they convey vary greatly, with some expressing addition, some showing sequencing, some indicating contrast, etc. Furthermore, grammarians often differ in the way they classify LAs' semantic types. For example, while some put "listing/numeration" (e.g., *first* and *second*) and "addition" (e.g., *furthermore* and *in addition*) together as one group (Biber, et al., 1999; Leech & Svartvik, 1994), others consider them entirely different categories (Celce-Murica & Larsen-Freeman, 1999; Parrott, 2000). Furthermore, the terms grammarians use to refer to the semantic types of LAs also vary greatly. For instance, the LAs that express a sequential relationship (*first*, *then*) have been called, among other terms, "listing," "numeration," "ordering," and "sequential."

After a close evaluation of the classifications given in the aforementioned grammar books, I adopted Celce-Murcia & Larsen-Freeman's (1999, p.530) framework because of its clarity, comprehensiveness, and simplicity at the same time. The framework has also been a widely used model in research (Chen, 2006; Goldman & Murray, 1992; Milton and Tsang, 1993). It is a simplified version of Halliday & Hasan's (1976) original four-way classification system. It classifies LAs into four major types with some subcategories, as shown below.

1. **Additive**: "emphatic," "appositional," and "comparative"
2. **Adversative**: "proper adversative," "contrastive," "correction," and "dismissal"
3. **Causal**: "general causal," "causal conditional"
4. **Sequential**

It is important to note, however, that some grammarians view many of the subcategories within a type as entirely different types.

For example, concerning the "appositional" subcategory (e.g., *in other words* and *for instance*)[3] under the "additive" type, Biber, et al. (1999) and Huddleston & Pullum (2002) list it as a type separate from

"additive." While these scholars have sound reasons for separating the two, I favor Celce-Murcia and Larsen-Freeman's inclusion of "appositional" in "additive" for two reasons. First, the inclusion is sensible because an appositional linking adverbial does introduce some explanatory information about what is being discussed, i.e., it is additive. However, being explanatory in nature, the "appositional" LAs may not offer additional information as directly and forcefully as the other LAs in the "additive" type may. Second, for the sake of simplicity, a classification system should have as few categories as possible as long as it covers all the elements in the system. As another example, Celce-Murcia & Larsen-Freeman's (1999, p.530) "sequential" category includes both listing and summative LAs (e.g., *first* and *to sum up*) although they did not explicitly list them as two subcategories. Other grammarians (Biber, et al., 1999, pp.875–876; Leech & Svartvik, 1994, pp.188–189), however, treat "summative" as an entirely different category from "listing/sequential." Again while there are understandable reasons for treating them separately, Celce-Murcia and Larsen-Freeman's inclusion of "summative" in "sequential" is legitimate because summary LAs always occur at the end of a discussion of a series of things as a move to complete the discussion. As such, these LAs indeed suggest sequential relationships. The inclusion of both "listing" and "summative" in the sequential type is sound also for the sake of simplicity.

It is important to note that the classification presented in this paper includes the use of a few concepts or terms that were not found in Celce-Murcia and Larsen-Freeman's model (the entire subcategories in the system can be found in Appendix I). The additions were meant to make the classification system clearer and more comprehensive. For example, I added the concept "similarity" to the "comparative" subcategory under the "additive" type. The addition should better distinguish this subcategory from "contrast," a subcategory under the "adversative" type. Technically a comparison of two things may reveal either similarities or differences (i.e., contrasts). Therefore, "similarity comparison" better defines the discourse relationship that this type of LAs (e.g., *similarly*, *by the same token*) suggests. I have also added the concept "concessive" to the "proper adversative" subcategory under the "adversative" type because they refer to the same type of LAs and "concessive/concession" is actually a more widely used term than "proper adversative." In addition, I have added the term "resultative" to the "causal" type because many grammarians used it instead of "causal" (e.g., Carter & McCarthy, 2006, p.25) and some use

both terms together to refer to this type of LAs, e.g., "causes and results" in Parrott (2000, p.306) and "result and inference" in Biber, et al. (1999, p.877). Also as aforementioned, Celce-Murcia and Larsen-Freeman did not list any subcategories under the "sequential" type although they included both listing and summative types of LAs. I have now listed the two subcategories plus the "simultaneous" subcategory (e.g., *at the same time*[4] and *meanwhile*) and the "transitional" subcategory (e.g., *by the way* and *incidentally*). The reason for including the "simultaneous" in the "sequential" type is that "simultaneous" LAs are temporal in nature like all the other sequential LAs. The reason for including "transitional" in the "sequential" type is, however, motivated more by a need of simplicity than by semantics. There are only three transitional LAs: *by the by*, *by the way*, and *incidentally*. It does not make sense to have a major type that has only three items. Of the four major types, "sequential" appears to be the type to which the transitional LAs are closest in meaning. What a transitional linking adverbial does is to indicate a temporary or permanent digression from the discussion of an issue or a series of related issues. Thus in a loose sense, such LAs may be considered "sequential."

It is necessary to point out that the classification system is not meant as a clear-cut guide for determining the meaning of LAs. In fact, as Celce-Murcia & Larsen-Freeman (1999, p.531) correctly note, "While such a classification is useful at the global level to sort out possible meaning relationships into types, it presents problems for definitions of individual connectors [LAs]." Often, the LAs in the same subcategory do not have exactly the same meaning and are often not exchangeable. For example, both *however* and *nevertheless* indicate concession but they are not always exchangeable, as is shown in the following BNC example in which *nevertheless* is not a good substitute for *however*:

(5) A judicial investigation into his case ordered the arrest of a member of the national police. *However* the case was passed to the military courts who revoked the arrest order. (*Amnesty*. London: Amnesty International, 1991)

What makes the problem even more complicated is that some of the LAs have more than one meaning. For example, *of course* can express both "emphatic" (congruent) and "concessive" (incongruent) discourse meanings, a point that will be discussed in detail in the "results" section. Due to these complexities involved in the classification of LAs,

it is paramount that we become fully aware of the limitations of any classification system, including the one used in this study. This is especially so when we use such a system in assisting language learning and teaching.

ITEM SEARCH AND FREQUENCY CALCULATION METHODOLOGY

Regarding search methodology, I used the time-saving customized word lists feature on Davies's BNC interface for searching all the one-word LAs (e.g., *additionally* and *therefore*). However, I had to conduct searches of the multi-word adverbials (e.g., *as a result* and *in addition*) by entering one item at a time because the customized feature does not work for these items. Furthermore, as aforementioned, some LAs have more than one meaning, so I had to peruse all the tokens of these items to decide their appropriate meaning. Such a procedure is not necessary, however, for those single meaning adverbials and therefore was not applied to them. There are two additional LA usage issues that have had search implications. First, many LAs are used in different positions in a sentence (e.g., sentence initial vs. other places).[5] With some, the position in which they appear may have semantic and syntactic implications. For example, as stated earlier, while a sentence-initial *so* or *yet* is clearly a linking adverbial, a *so* or *yet* after a comma introducing a clause is considered by some to be a conjunction.[6] Furthermore, based on the observations of my initial searches, the position variation of such LAs seemed register-specific. The second usage issue that has a search implication is that some LAs may appear either with or without a prepositional phrase (e.g., *as a result* or *as a result of this*; *in addition* or *in addition to that*). For these LAs as well as those that may appear in different positions, I searched for and reported their frequencies used in the different fashions because such information may be useful for language educators, material writers, and other professionals.

Concerning frequency calculation, most studies so far have used the "number of tokens per number of words" method (Biber, et al., 1999; Granger & Tyson, 1996; Milton & Tsang, 1993), although such a word-based method has been criticized as "flawed" by Bolton, et al. (2002, p.172) for failing to take into account the fact that linking adverbials work mostly at the sentential level and beyond. Bolton, et al. argued for the use of "number of tokens per number of sentences" instead. Yet other scholars, as Chen (2006, p.118) reports, contend that the word-based method is as

reasonable as the sentence-based method because linking adverbials "can also be used in non-finite, dependent clauses," i.e., used below the sentence level. Furthermore, the sentence-based method has a drawback of its own as it "puts a particular spin on the results" (Chen, 2006, p.123) if there is a substantial difference in the average sentence length between the sets of data being compared. When two sets of data each contain the same number of words and linking adverbials, the set with a much shorter average sentence length (which would mean a greater number of sentences in it) will show a much lower sentence-based frequency (where frequency=the total number of linking adverbials divided by the number of sentences; hence the higher the number of sentences, the lower the frequency). This study uses the word-based method instead of the sentence-based method for two reasons. First, one of the purposes of this study is to test the findings in the two existing corpus-based studies on the issue (Biber, et al., 1999; Carter & McCarthy, 2006). Of the two, only Biber, et al.'s study reported frequency findings in terms of concrete numbers and it used the "number of tokens per million words" method. Thus in order to make the comparison of the two studies' findings meaningful, this study must use the same word-based method. Second and equally importantly, this cross-register study compares five sets of data that involve a substantial variation in the average sentence length (with 9.96 words per sentence in speaking, 22.17 in academic writing, 12.23 in fiction, 20.91 in news, and 20.58 in other writing). The large variance between speaking/fiction on the one hand and the other three written registers on the other can, as indicated above, greatly affect the frequency results in a sentence-based method.[7]

RESULTS AND DISCUSSION

Frequency, Usage, and Distribution across Registers: General Findings

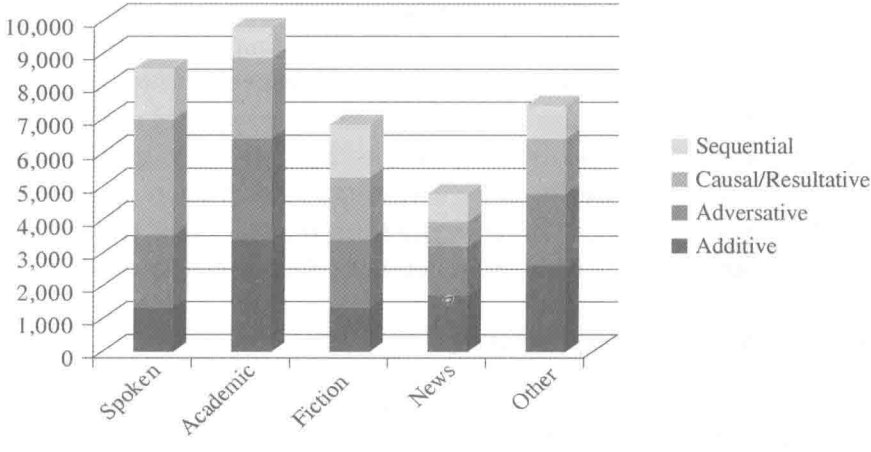
The overall frequency results of the four types of LAs in the BNC across the five registers are reported in Table 1 and illustrated in Figure 1. Information about the frequency and usage patterns of the various subcategories and all the 110 individual LAs is provided in Appendix I .[8] In addition, a list of the 110 LAs organized by frequency order is presented in Appendix II. It consists of three bands with Band 1 containing those of a frequency level of at least 50 per million words, Band 2 including those of a frequency level between 10 and 49.90, and Band 3 composed of those

under 10. Such frequency order information, along with the information about the usage patterns, should be very useful for material writers and language educators in their selection of LAs for instruction, a point I will return to and elaborate in the conclusion section.

Table 1: Total frequency comparison by type across registers (frequency per million words)

Linking Adverbial Type	Overall	Speaking	Academic	Fiction	News	Other
Additive	2,238	1,334	3,420	1,332	1,694	2,605
Adversative	2,140	2,202	3,028	2,091	1,487	2,179
Causal/Resultative	1,850	3,457	2,422	1,833	756	1,663
Sequential	1,063	1,555	902	1,592	830	971
Total	**7,291**	**8,548**	**9,772**	**6,848**	**4,767**	**7,418**

Figure 1: Total frequency comparison by type across registers



The overall frequency results of this study support many of the major general frequency findings reported in Biber, et al. (1999). For example, academic writing and speaking boast substantially more use of LAs than the other registers while news has the smallest number of such items, especially in the adversative (concessive/contrastive) type. Also, as in Biber, et al.'s data, academic writing in the BNC uses many more additive LAs than the other registers. Similarly, the transitional LAs (e.g., *by the way*) in the BNC constitute the smallest subcategory of all. Furthermore, as is

shown in the Appendix I,[9] the BNC data analysis also supports Biber, et al.'s (1999) finding that certain LAs are particularly common in academic writing, such as *however* and *moreover*, while a few appear extremely frequently in speaking, e.g., *so* and *then*.

The BNC data analyses have also yielded findings that are somewhat different or entirely new. For example, while both Biber, et al.'s (1999) and the BNC data show that the frequency level of LAs in fiction and news is lower than that in speaking and academic writing, the disparity in the BNC data is far less than in Biber, et al.'s. In their data, the frequency level in fiction and news is approximately just one third of that in speaking and academic writing (a ratio of around 2,000 in fiction and news vs. around 6,000 in speaking and 7,200 in academic writing). In the BNC, the former is about half of the latter (a ratio of 6,848 in fiction and 4,767 in news on the one hand vs. 8,548 in spoken and 9,772 in academic writing on the other). Also whereas Biber, et al.'s (1999, p.880) data indicate that speaking, fiction, and academic writing "share a similar level of frequency of contrast/concession adverbials [termed 'adversative' in this study]," the BNC data suggest that academic writing uses much more of this type of adverbials than speaking and fiction (their frequency levels are 3,028, 2,202, 2,091 respectively). Although it is difficult to pin down the reasons for the differences between Biber et al's and the BNC findings, there are two plausible causes: 1) the different composition of the corpora (i.e., the Longman Spoken and Written English Corpus vs. the BNC)[10] and 2) a difference in the number and the actual items of the LAs examined in the two studies. Yet, as Biber, et al. (1999) did not list all the LAs in their analysis, it is impossible to know for sure regarding the latter cause.

An example of new finding deals with the use of LAs in fiction. As can been seen in Table 1 and Figure 1, while fiction's overall use of LAs across the registers is indeed lower than that of speaking and academic writing, its use of the sequential type is actually higher than the latter two (in fact, it is the highest of all the registers). This high frequency level of sequential LAs in fiction is likely due to the fact that fiction is narrative and the sequence of events plays a very important role in narration. Another interesting finding regarding the use of LAs in fiction is that fiction sometimes uses much more colloquial LAs in its dialogues than actual speaking does, i.e., the frequency of some such colloquial LAs is higher in fiction than in the speaking register. For example, in the BNC, the occurrence of the "additive" linking adverbial *besides* (i.e., when used

without a noun or not as a preposition) is over forty times more in fiction than in speaking (46.25 vs. 1.16 tokens per million). The following LAs are also used much more frequently in fiction than in actual speaking: *again* (used sentence initial as an "additive" linking adverbial; 204.08 vs. 119.34), *all the same* (31 vs. 16.35), *as a matter of fact* (13.52 vs. 5.42), *by the way* (19.70 vs. 10:34), *for one thing ... (for another)* (7.97 vs. 3.29), *not to mention* (5.28 vs. 0.70), *too* (362.17 vs. 86.89), and *What I mean is* (2.59 vs. 1.35). If we can assume that the frequency of such LAs in the speaking register of the BNC represents the normal usage in speaking, then the much higher frequency of these LAs in fiction would suggest that fiction has a tendency to over use such LAs in its dialogues. This overuse is of interest and importance because Biber, et al. in their examination of the usage patterns of colloquial idioms also found that such idioms "are used primarily in fiction, with less frequent use in conversation" (1999, p.1026). It seems that there might be a pattern in fiction to overuse colloquial expressions in creating conversations, a finding that should be of interest to fiction writers and those in the business of learning or teaching fiction writing.

News is another register about which the BNC data analysis reveals some new information. Although news uses the lowest overall number of LAs, the frequency level of the additive and sequential types of LAs in news does not actually differ much from those in the other registers. In the use of additive LAs, its frequency, as shown in Table 1, is higher than that in speaking and fiction (1694 in news vs. 1334 in speaking and 1332 in fiction). With regard to the sequential type, the frequency in news is comparable to that in academic writing (830 vs. 902); Furthermore, news claims the highest frequency level in the use of a few adverbials in the simultaneous and summative subcategories of the sequential type, such as *meanwhile*, *in the mean time*, and *in short*. What is really striking is that the frequency level of *meanwhile* in news is almost three times that of the overall average frequency (134.52 vs. 47.92). The high frequency of *meanwhile* and *in the mean time* in news can be explained by the fact that news reports are often narrations of events that involve several actions taking place at the same time.

Another point worth noticing is that while academic writing and speaking record the highest and the second highest frequency levels of LAs respectively, the use patterns differ markedly between the two registers. For example, while academic writing uses nearly three times more additive adverbials and one third more adversative ones, speaking claims far more

items in the causal/resultative and sequential types. Finally, because my data analysis contains the "other writing" register, one that was absent in Biber, et al.'s (1999), a word about this register is in order. Overall, "other writing" uses more LAs than news and fiction but fewer than academic writing and speaking. Furthermore, as writing, its use pattern is naturally very similar to that of academic writing with just a little lower frequency in every type except for the "sequential" type.

One thing we need to keep in mind when interpreting the frequency results is the fact that there are a few items that have extremely high overall frequency levels, such as *also* (1,235.65 tokens per million words), *however* (597.30), *so* (744.33), and the multi-meaning *then* (491.18 as a sequential linking adverbial and 344.44 as a causal/resultative). The frequency distribution of all these items also varies considerably from register to register. For instance, *however* boasts a frequency of 1,216.62 in academic writing but only 89.31 in speaking. The adverbial *then*, on the other hand, has a frequency of 1,136.31 as a sequential linking adverbial in speaking but only 184.06 in academic writing. The extremely high frequency of one item would greatly increase the total frequency level in a type or subcategory. For example, the total frequency of the 15 items in the numerative/listing subcategory of the sequential type is 934.36, of which, the item *then* accounts for 491.18. As another example, speaking makes use of far more causal/resultative adverbials than academic writing (3,457 vs. 2,422) but of the 3,457 in speaking, 2,685 are the tokens of *so* while only 360 of the 2,422 in academic writing are tokens of *so*. In other words, academic writing boasts almost three times more uses of other causal/resultative LAs (2,062 vs. 772) due to its extensive use of formal adverbials in this category, such as *therefore* and *thus*. Hence, it is important that we do not completely ignore this factor when we look at a type's or a subcategory's total frequency level.

Noticeable Findings on Some Specific LAs

As is the case with the findings about the general use frequency patterns, the data analysis of the usage patterns of specific LAs has yielded not only results that support many of the previous findings but also those that challenge existing descriptions. Limited by space, I will focus only on the latter. One example relates to the additive linking adverbial *what's/what is more*. Some grammar books (Carter & McCarthy, 2006, p.216; Parrott, 2000, p.304) report that this linking adverbial is used mostly in speaking,

yet in the BNC, it is actually much more common in academic writing, news, and other writing. Similarly, Carter & McCarthy (2006, p.221) suggest that *to put it another way* is a typical spoken linking adverbial but in the BNC, it is used mostly in the "academic writing," eleven times more than in speaking (2.14 vs. 0.19 tokens per million). In fact, in the "spoken" register, it is not even as common as its two sister adverbials *to put it bluntly/ mildly* (its ratio with the latter is 0.19 vs. 0.58 per million words). As one more example, Parrott (2000, pp.303, 306) lists the following as items used mostly in speaking: *as a result*, *at the same time*, *in the first place*, and *in that case* but the BNC data show that they actually all occur more frequently in the academic writing (in the case of *as a result*, the ratio is 41.32 vs. 11.32, over three times more in academic writing). Also Parrott says that *too* is used mostly in speaking, yet the BNC data analysis indicates that its frequency is almost the same in speaking and academic writing (86.89:84.98), although its appearance rate in fiction is much higher (362.17).

My data analysis has also uncovered some usage findings that have not been reported in the existing research and grammar books. The following are a few examples that should be of interest and importance to language learners and teachers. The first deals with the use of summative LAs (e.g., *all in all*, *in conclusion*, and *to sum up*; 8 of them in total). First, their frequency is very low, only 23.12 tokens per million words in the BNC. This number is just one fourth of the simultaneous subcategory and two percent of the numerative/listing subcategory (the three subcategories ratio being 23.12:91.68:934.36). The fact that the summative number is only one fourth of that of simultaneous subcategory is especially striking because the latter itself is a very small subcategory. The extremely low frequency of summative LAs contrast sharply with the prominence these adverbials generally receive in grammar books and reference books.

Second, summative LAs are used mostly in writing, especially academic and news writing and not very often in speaking (their frequency distribution in the three registers is 49.04 in academic writing, 28.12 in news, and only 9.47 in speaking). It is important to note, however, that the high usage of summative LAs in news writing is due to, as mentioned earlier, a frequent use of a couple of such LAs such as *in short* and *all in all*. Third, *in short* is by far the most frequently used summative LA as it has an overall frequency of 12.39, accounting for 54% of the 23.12 frequency rate of all the 8 summative LAs combined. In other words, the frequency rate of *in short* is higher than that of the other seven summative adverbials

combined. Its rate is almost 6 times that of *in conclusion* (which has a 2.14 per million words frequency level) and *in summary/sum* (2.39). It is also important to note that the summative adverbials in the infinitive form (*to conclude, to sum up* and *to summarize*) are very seldom used, for they have a very low frequency rate of 0.49, 0.49, and 0.48 respectively.

Another finding of interest concerns the numerative/listing LAs (e.g., *first* and *secondly*). We all know that in using these items, one can opt for either the numerative form or the numerative plus "ly" form (e.g., *first* and *firstly*). It is interesting to note that the data show that which form to use varies considerably from number 1 to the rest of the numbers. In the case of *first* and *firstly*, the numerative form is used far more frequently than the "l" form (a ratio of 55.10:17.09) but in the following numbers, it is the latter form which is much more common (e.g., the ratio of *second* and *secondly* is 15.05:28.21). It is also important to know that the use frequency of such numeratives decreases substantially, starting from *second/secondly*. It drops from 72.19 per million words in the case of *first/firstly* to a minuscule of 2.79 in the instance of *fourth/fourthly*. In other words, the use of such numeratives is very rare beyond *second/secondly*. That is the reason my list of such LAs in Appendix I stops at *fourth/fourthly*. Another point worth mentioning deals with the use of *last*. As shown in Appendix I, the frequency of *last/lastly* as a linking adverbial is fairly low (5.20 per million words) and, of the two forms, *last* is seldom used (its ratio with *lastly* is 0.89:4.31). More importantly, when *last* is used, it usually co-occurs with the qualifying phrase *but not least/but by no means least* as shown in the following example.

(6) *Last, but definitely not least,* I ask you to carefully read the "situation vacant" list for the committee. (*NCT Birmingham Central Branch Newsletter,* 1989)

Of the 89 total tokens of *last* as a sequential linking adverbial in the BNC, 53 (60%) appear with this qualifying phrase (although the wording of the phrase sometimes varies).

One more interesting finding is related to the use of the concessive adversative *yet*. The BNC data shows that although the frequency of *yet* is about the same in both speaking and academic writing (307.21 vs. 307.46 tokens per million), the positions in which it appears differ significantly between the two registers. While in speaking, it is seldom used sentence-initially (only 8.42 times per million words), in academic writing, the

frequency of its appearance in the sentence initial position is very high (116.40 per million words). Conversely, in speaking, the use of *yet* in the other positions is much higher than in academic writing with a ratio of 298.79:190.06. Another noticeable finding deals with a group of LAs that often co-appear with a conjunction (usually right after it), e.g., *and finally*, *and/but of course*, *and then*, *and yet*, *but ... all the same*. The BNC data suggest that the use of this type is mostly found in speaking and seldom in writing, especially academic writing. There is, however, one interesting exception. In the use of *and also* and *but also* (either as part of the "*not only ... but also*" structure or as the independent conjunction *but* plus LA *also* structure), the former (*and also*) appears slightly more in speaking than in academic writing (88.53 vs. 74.21) but the latter (*but also*) is used far more frequently in academic writing than in speaking (130.13 vs. 22.42 in the case of *not only ... but also* and 19.26 vs. 6.99 in the case of the independent conjunction *but* plus LA *also* structure).

Finally, there are some interesting findings dealing with multi-meaning LAs. First, deciding on the meaning of such an item often requires a close reading of the discourse context in which the adverbial is used. In some cases, the decision is difficult. Thus, accurately describing the meanings and functions of these LAs can be very challenging. An examination of a few such items will help illustrate the point.

Let us first look at *of course*. It can express several different meanings. The two major ones are emphatic (a subcategory in the additive type) and concessive (a subcategory in the adversative type). The former expresses congruity with what has been stated or expected and the latter conveys incongruity, as shown in the following BNC examples:

(7) "Can I be taught to act?" This is something everyone wonders when starting out, even if they are not intending to make a living out of acting. The answer is, *of course*, no. No-one can actually teach anyone to act.
(*So You Want to Be an Actor?* Rendle, A. London: A & C Black, 1991, pp.5–107)

(8) African sculpture has been commonly described as frontal, i.e., the figures are symmetrically disposed about a vertical axis. There are, *of course*, exceptions to this.
(*Art Criticism: A User's Guide*. Darracott, J. London: Bellew, 1991)

It is clear from the discourse context, the *of course* in (7) is emphatic, stressing the certainty of the answer "no" as an expected one, for it can

be substituted by the adverbial "certainly." The *of course* in (8), on the other hand, is concessive, voicing incongruity as it can be replaced by the adverbial *however*.

Furthermore, there are actually two types of emphatic use with *of course*. One is true emphatic. It shows real congruity and typically occurs in a response to a question. The other is false emphatic where it appears to state "superficial agreement with what has preceded while at the same time hinting a more fundamental disagreement" (Quirk, et al., 1985, p.1469). The following BNC examples illustrate the two different types of emphatic use.

(9) "Was the door locked when you went up this morning?" asked Mary.
"*Of course* it was. Otherwise whoever it was would probably have come in from the corridor ..."
(*A Classic English Crime*. Heald, T. London: Pavilion, 1990, pp.96–216)

(10) *Of course* you cannot teach confidence *but* you can teach a way of acquiring it.
(From the same source as Example 7 above)

(11) *Of course*, Irish clergy and laity are sometimes at the forefront of political religious change in other countries, and a lively Irish intellectuals' religion will continue: *but* whether or not it will eventually affect the structure of power is another matter.
(*The Tragedy of Belief*. Fulton, J. Oxford: OUP, 1991)

The *of course* in (9) is a clear example of true emphatic because it emphasizes the affirmative answer that the door was locked. In contrast, the *of course* in (10) and (11) is not truly emphatic because the end message in either sentence expresses incongruity with the point introduced earlier by *of course*. In (10), the end message is that we can teach a way of acquiring confidence, thus indirectly contradicting the earlier claim that confidence cannot be taught because if you can teach people how to acquire confidence, it basically means you can teach it. In (11), the end message questions the ultimate effect of Irish clergy and laity's involvement in politics on Irish's power structure. It is important to note that, as shown in examples (10) and (11), the false emphatic use of *of course* is usually followed by a contrastive linking adverbial such as *but* and *on the other hand*. It is also worth pointing out that this false type of emphatic use is closer to the concessive use than to the true emphatic use because, like concessive use, false emphatic expresses incongruity. It differs from concessive use only in that while it shows incongruity indirectly, the latter expresses it directly.

A close analysis of the two major semantic functions of *of course* in the discourse and genre contexts in which they are used indicates that the emphatic *of course* is typically used to stress an affirmative answer to a question asked either by an interlocutor in a conversation or by the speaker/writer him/herself as a set-up for highlighting the emphatic response to come, as is shown in examples (7) and (9). Thus such use is more common in spoken language than in writing. On the other hand, the concessive *of course* is usually found in a discussion of a rather complex issue or person where the speaker/writer tries to present a more complete or balanced view. In such a case, the *of course* LA allows the speaker/writer to shift from one side of the issue to another or from one perspective to another, as can be clearly seen in Example (8). Although the use of *of course* in this semantic function can be found in both speaking and writing, it figures more prominently in writing, especially in formal writing that deals with politics, religion, science, etc., because issues discussed in such writing tend to be complex. In short, the use of the different semantic functions of *of course* is register/genre-sensitive (the same is true of the other polysemous LAs as will be shown below).

While in most cases a close reading of the discourse context can allow us to decide *of course*'s meaning, in some cases the decision is very difficult if not entirely impossible. Let us look at the following BNC example.

(12) I remember Mrs. H.-S. and Sir Harry walking into the library, he was looking very suspicious and upset, and both were talking very low. Well, I slipped out, *of course* as mistress likes us to —
(From the same source as Example 9 above)

Obviously, this *of course* is neither emphatic affirming what has been stated nor concessive regarding what has transpired, for we cannot replace it with "certainly" or "however." Based on the discourse context, the most appropriate replaceable adverbial appears to be "naturally." This is because we know that Mrs. H.-S. and Sir Harry were talking in low voice and we can infer that the school "mistress" has trained the students not to make noise or disturb people in the library. Given the circumstance, "slipping out" would be the natural choice for the speaker. In this sense, this type of use of the adverbial can be considered a type of emphatic, as it indicates an action or idea as the "natural" thing in context.

At the same time is another multi-meaning linking adverbial that often expresses an underlying message that differs from its surface meaning.

Given that *at the same time* can express its literal temporal meaning of "simultaneously," it requires us to read closely when the adverbial is used. When expressing concession or contrast, the adverbial on appearance does indicate a simultaneous/sequential relationship but in reality it expresses incongruity as can be seen in the following two BNC examples:

(13) And if in the present case the staff plan is at fault, blame can be laid at no one's door but my own. *At the same time*, it is only fair to point out that my task in this instance had been of an unusually difficult order. What had occurred was this. Once the transactions were over —; transactions which had taken this house out of.
(*The Remains of the Day*. Ishiguro, K. London: Faber & Faber, 1989, pp.1–110)

(14) He insisted that there were good reasons for such experimentation, from which film-makers anywhere could benefit. *At the same time*, he remained committed to a popular cinema, a cinema of the slums and the villages.
(The Seventh Birmingham International Film & TV Festival. Birmingham: Enterprise Magazines Ltd., 1991)

In both examples, *at the same time* introduces information that is incongruous with what has been just presented. As is the case with the concessive *of course*, the concessive use of *at the same time* is typically found in the discussion of complex issues that involve opposing perspectives. It allows the speaker/writer to cover both sides by providing a good transition from one perspective to another.

The difficulty involved in deciding the meaning of such LAs can also be found in the use of the phrase *as a matter of fact*. A few grammar books (e.g., Parrott, 2000, p.305) have listed it as a contrastive/concessive linking adverbial but none of the grammar books I examined mentioned that it sometimes actually expresses an emphatic/additive discourse relationship. The following two BNC examples illustrate its two possible meanings.

(15) Yet no great effort of imagination is required to describe Jones meaningfully and accurately as either being like those who are Tolstoy-liking or not being like those who are Tolstoy-liking. *As a matter of fact*, Jones is not like those who are Tolstoy-liking (i.e., he lacks their Tolstoy-liking views and attitudes). He is of course also not like those who are Tolstoy-disliking. (contrastive, adversative, incongruity)
(*The Concept of Reality*. Pivcevic, E. London: Gerald Duckworth, 1986, pp.1–100)

(16) Yes we'll have a meeting on Tuesday to decide whether we're going to have a [debate] or not. Yes, well, *as a matter of fact* er, the moderator was talking to me on the telephone Aha I think it was yesterday yeah erm, he wants to come along and see you.
(Convs rec. by "Margaret", PS002, between 13 and 16 Mar 1992)

It is rather self-evident that, in (15), what is introduced by *as a matter of fact* obviously contrasts or contradicts what has just been stated, for it basically corrects the information presented in the first sentence. Such, however, is not the case with the adverbial in (16) because it does not indicate an adversative relationship at all. Rather, it conveys an emphatic/additive meaning. In the first sentence in (16), the speaker is telling the interlocutor that they will have a meeting and then he tries to reassure the interlocutor that the meeting is going to take place by adding the information with *as a matter of fact* that he and the moderator were talking about it on the phone just the previous day. As shown in this example, this affirmative emphatic use of *as a matter of fact* is often found in conversation, just as is the case of the use of the affirmative emphatic *of course* discussed above. It thus offers further evidence that the use of the different semantic functions of polysemous LAs is register/genre-sensitive.

As aforementioned, each of these polysemous LAs is listed separately in the table in Appendix I (e.g., the use of *of course* for emphatic purposes is listed under the additive type and its use as an adversative LA is listed under adversative type) and therefore the frequency information of its use in each function can be found in the table.

CONCLUSION

This cross-register corpus study has yielded interesting findings about the frequency levels of the LAs and their register distributions as well as the usage patterns of some specific LAs. It has also produced a comprehensive list of English LAs organized by register and semantic type. The information reported should be of interest and use to professionals in various fields, especially those in language teaching. For example, the finding that news makes an extensive use of some sequential and summative LAs indicates that, in teaching journalism English, it will be advisable to focus on sequential and summative LAs, especially those used most frequently in news, such as *in the mean time*, *meanwhile*, and *in short*. As another example, the finding that fiction sometimes overuses colloquial

LAs may be an issue worth a close look by fiction writers and those in the business of learning and teaching fiction.

Furthermore, the finding of a general low use frequency of summative adverbials might make us wonder whether it is advisable to give them so much prominence both in the teaching material and in the classroom. I am not suggesting that we do not teach them, though. I am just wondering about the wisdom of having them occupy such a prominence in our teaching of LAs when there are many other far more useful ones that have been neglected. In order to avoid the problem of focusing on seldom used LAs and to make sounder decisions regarding which idioms to include for instruction, language educators and material writers may want to look at LAs' frequency and usage patterns. The information in Appendix II should be especially helpful for deciding the sequence in which LAs need to be taught. It is paramount to note, however, that I am not suggesting that the selection of LAs for instruction should be based exclusively on the frequency order. Yet it should be one criterion to consider along with others such as students' learning needs and a curriculum's objectives.

It is important to conclude by pointing out the limitations of the present study. As mentioned earlier, identification and classification of LAs is a very challenging task due partly to a lack of clear consensus among grammarians on these items. Although great effort was exerted to make the information reported as complete and accurate as possible, there are likely omissions, inaccuracies, and points that are debatable. Furthermore, given that this study focused exclusively on British English and given that Biber, et al.'s (1999) data have shown some differences between British and American English in the use of some LAs, it will be necessary in the future to examine other varieties of English to determine any specific differences among them in the use of these adverbials.

Notes

1. Huddleston & Pullum's (2002) comprehensive grammar, according to the authors' preface, also made use of corpora. Yet their approach is not really as corpus-based as the other two. At best, it is a corpus-informed book, not completely corpus-based.
2. The fact that Carter & McCarthy (2006) use only one term, "linking adjuncts," in their discussion does not mean they do not distinguish the different subtypes of linking devices. It may only suggest that such a differentiation is

not important in their treatment of the topic.

3. Other terms have been used for "appositional" LAs, such as "elaboration and exemplification" (Huddleston & Pullum, 2002, p.779) and "restating" (Parrott, 2000, p.306).
4. *At the same time* can also indicate a concessive/contrastive discourse relationship, a point that will be discussed in detail later in the paper. In other words, it has two different meanings. I have reported their different functions separately, listing its two meanings in their appropriate categories.
5. Yet, as one anonymous reviewer pointed out, the use of the concept "sentence" to refer to units in spoken language is disputable because, among other things, it is very difficult, if not entirely impossible, to mark sentence boundaries in speech. While the point is well taken, I still use the sentence unit measurement in spoken language for the sake of consistency and simplicity. The BNC includes both spoken and written language with the latter constituting about 90% of the total data. To make the frequency comparison among the registers possible and meaningful, a common unit has to be used. Furthermore, the sentence boundaries in the transcribed spoken data in the BNC are already marked using the sentence-unit measure. It is simple to use.
6. I include the latter use of *so* and *yet* in the search because the structural function of the words so used is not completely clear. As Huddleston & Pullum (2002, p.1320) put it, they are "closer to coordinators than to LAs" but also have a lot in common with LAs. For that reason, many grammarians include such use of the two words as LAs (Biber, et al., 1999; Bussmann, 1996; Carter & McCarthy, 2006).
7. In fact, I did conduct a sentence-based frequency test (tokens per 100,000 sentences) on the BNC data. The results, in comparison with those obtained from the word-based method used in this study, indeed showed the spin effect mentioned by Chen (2006). While for the "academic," "news," and "other writing" registers (whose average sentence lengths were very similar, a little over 20 words in each register) the results from both calculation methods were basically the same in proportion terms, the frequency results for "speaking" and "fiction" (two registers with an average sentence length of only around 10 words), however, varied (or decreased, to use a more specific term) enormously from the word-based method to the sentence-based method due to their much shorter (hence greater number of) sentences.
8. Appendix I contains a lot of information. Some clarification of its organization is necessary. First, several types of additional usage information regarding some LAs are given in italics in parentheses, such as their frequency in different positions. Due to its variety, the parenthetical information does not look very consistent or systematic. However, because of their potential usefulness for different groups of professionals, these different types of information are included at the sacrifice of some consistency. Second, with those polysemous LAs, each meaning is listed separately under its major type. For example, the item *of course* has two major meanings: "emphatic" under the "additive" type and "concessive" under the

"adversative" type. However, no such separate listing is given if the two meanings are just subcategories within the same type. This is because the difference between two subcategories is sometimes very subtle and many grammarians do not even treat them as different categories. A case in point relates to the "concessive" and "contrastive" classification. They are listed as two subcategories under the "adversative" type in my system. Yet many grammarians (Biber, et al, 1999, p.878; Leech & Svartvik, 1994, pp.100–101; Parrott, 2000, pp.304–305) group the two as one category. Thus in my reporting, if a linking adverb has both "concessive" and "contrastive" uses, it is reported under one. For example, *though* is listed in "concessive" although it also has some uses expressing "contrast."

9. To find the information in Appendix I about the LAs referred to here, just look for the items in the table. Also from here onward, whenever necessary, please refer to Appendix I for illustrative information for any of the usage patterns or frequency information of the subcategory or individual LAs being discussed.
10. I owe this explanation to one of the anonymous reviewers, who suggested it as a most likely reason.

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APPENDIX I

Frequency and Distribution of LAs by Type and Subcategory (per million words)

Additive LAs

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Emphatic)						
Above all	22.30	5.23	35.06	14.82	15.13	27.32
Additionally	3.72	0.29	6.29	0.43	0.47	5.89
Again	94.56	119.34	49.50	204.08	40.34	58.23
(Sentence initial)	*(16.93)*	*(11.03)*	*(31.56)*	*(6.34)*	*(6.17)*	*(19.28)*

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Emphatic)						
Also	1,235.65	554.43	1,718.84	354.87	1,303.81	1,598.18
(Sentence initial)	*(44.78)*	*(35.61)*	*(41.67)*	*(21.79)*	*(35.54)*	*(60.85)*
(In "and also")	*(59.46)*	*(88.53)*	*(74.21)*	*(18.39)*	*(34.50)*	*(71.34)*
(In "not only ... but also")	*(63.91)*	*(22.42)*	*(130.13)*	*(15.66)*	*(33.53)*	*(78.55)*
(In "but also" independently)	*(10.49)*	*(6.99)*	*(19.26)*	*(3.61)*	*(4.84)*	*(12.56)*
As I/they/you say	16.65	111.10	1.50	19.86	3.63	2.13
As well	4.68	10.64	1.35	7.28	2.55	2.49
As a matter of fact	1.72	2.41	1.11	6.09	0.10	0.67
Besides	10.83	1.16	3.18	46.25	3.95	5.13
In addition (to)	78.74	15.10	145.24	7.41	31.49	115.52
(With "to")	*(34.31)*	*(10.25)*	*(52.95)*	*(4.57)*	*(14.57)*	*(50.62)*
(Without "to")	*(44.43)*	*(4.93)*	*(92.20)*	*(2.84)*	*(16.92)*	*(60.90)*
Further	6.52	0.10	23.72	0.24	1.60	6.06
Furthermore	28.82	2.81	95.66	2.90	4.51	28.48
Moreover	42.28	1.16	125.47	9.76	10.81	44.58
Not to mention	4.06	0.70	2.74	5.28	4.40	5.09
Of course	89.03	207.89	46.14	201.6	36.52	55.00
To crown it all	0.07	0.10	0.13	0.06	0.00	0.07
To cap it all	0.32	0.29	0.06	0.49	0.49	0.34
Too	149.50	86.89	84.98	362.17	107.92	129.74
What's (is) more	7.17	2.65	6.51	7.35	4.55	9.31
Subtotal	**1,796.62**	**1,122.29**	**2,347.48**	**1,250.94**	**1,572.27**	**2,094.23**
(Apposition/Reformulation)						
i.e.	0.02	0.00	0.13	0.00	0.00	0.00
That is	0.59	4.99	0.19	0.19	0.00	0.11
That is to say	7.26	3.87	13.84	3.46	0.85	7.51
In other words	23.11	17.80	51.01	4.69	5.64	34.27
For example	236.59	106.82	594.64	17.85	51.61	278.44
For instance	72.53	52.06	155.35	25.38	27.92	79.92
For one thing	4.13	3.29	4.67	7.97	2.73	3.31
(Together with "for another")	*(1.05)*	*(0.29)*	*(1.36)*	*(1.98)*	*(0.47)*	*(0.98)*

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Apposition/Reformulation)						
Namely	21.45	7.64	65.13	2.66	6.49	21.08
To put it another way	0.79	0.19	2.14	0.43	0.09	0.08
To put it bluntly/ mildly	0.60	0.58	0.19	0.80	0.47	0.74
What I'm saying is	0.18	0.68	0.06	0.19	0.00	0.16
What I mean is	0.65	1.35	0.00	2.59	0.00	0.2
Which is to say	0.65	0.39	1.56	0.68	0.28	0.49
Subtotal	**368.55**	**199.66**	**888.91**	**66.89**	**96.08**	**426.31**
(Similarity Comparative)						
Alternatively	11.37	0.97	24.24	0.99	2.82	15.70
By the same token	1.48	0.48	2.33	0.99	1.32	1.55
Correspondingly	3.51	0.19	9.79	0.37	0.66	4.11
Likewise	11.77	3.68	23.66	6.55	4.98	13.66
Similarly	44.61	6.87	123.14	5.37	15.51	49.71
Subtotal	**72.74**	**12.19**	**183.16**	**14.27**	**25.29**	**84.73**
TOTAL	**2,237.91**	**1,334.14**	**3,419.55**	**1,332.10**	**1,693.64**	**2,605.27**

Adversative LAs

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Proper Adversative/Concessive)						
At the same time	37.64	20.39	59.10	25.87	15.70	43.10
(With and, but, yet, and while)	*(13.83)*	*(9.20)*	*(20.01)*	*(11.72)*	*(6.25)*	*(16.76)*
However	597.30	89.31	1,216.62	187.54	387.85	754.13
Nevertheless	70.45	26.03	159.93	37.36	27.92	83.91
Nonetheless	12.96	4.06	24.43	4.08	6.30	16.53
Of course	207.75	339.19	196.71	358.40	85.22	165.02
Then again	5.21	17.13	1.49	6.85	3.85	3.75
Though *(Including "contrastive" meaning)*	123.86	380.07	132.88	126.48	76.15	91.43

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Proper Adversative/Concessive)						
Yet	325.15	307.21	307.46	456.07	305.88	309.85
(Sentence initial)	*(77.18)*	*(8.42)*	*(116.40)*	*(69.34)*	*(74.26)*	*(87.11)*
(After a comma)	*(37.26)*	*(10.64)*	*(40.25)*	*(58.35)*	*(27.92)*	*(38.94)*
(In "and yet ...")	*(34.42)*	*(45.38)*	*(29.94)*	*(65.02)*	*(14.10)*	*(28.92)*
(In other positions)	*(176.29)*	*(242.77)*	*(120.87)*	*(263.36)*	*(189.6)*	*(154.88)*
Subtotal	**1,380.32**	**1,183.39**	**2,098.62**	**1,202.65**	**908.87**	**1,467.72**
(Contrastive)						
Actually	14.17	70.15	1.81	22.29	3.94	5.80
As a matter of fact	2.11	3.01	0.90	7.43	0.10	1.00
Conversely	6.69	0.58	18.99	0.25	1.32	9.31
In/By comparison	12.88	5.00	23.98	5.19	7.05	15.71
In/By contrast	22.38	1.74	104.02	5.31	19.36	39.00
In fact	162.63	289.70	206.03	133.81	79.49	157.10
In reality	10.18	3.29	18.34	4.14	6.12	12.66
On the other hand	53.11	23.90	115.62	26.77	19.63	58.77
Subtotal	**284.15**	**397.37**	**489.69**	**205.19**	**137.01**	**299.35**
(Correction)						
Instead	72.63	22.45	79.47	89.90	78.30	78.10
On the contrary	7.97	1.26	18.08	9.14	2.46	7.35
Rather	11.62	7.26	25.60	12.53	4.32	9.84
Subtotal	**92.22**	**30.97**	**123.15**	**111.57**	**85.08**	**95.29**
(Dismissal)						
Admittedly	7.08	5.13	13.55	5.56	5.64	6.57
After all	35.19	7.16	22.42	86.69	26.32	31.43
All the same *(Often used with but)*	10.21	16.35	3.50	31	3.12	5.85
Anyhow	4.6	17.22	1.30	10.31	0.28	2.04
Anyway	116.52	504.41	18.41	232.17	35.53	44.80
At any rate	6.68	4.45	9.98	13.46	2.44	4.98
Despite N/this/ that	143.59	21.48	178.10	89.07	238.48	164.41

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Dismissal)						
(Despite this)	*(5.31)*	*(0.48)*	(10.63)	*(1.73)*	(4.98)	*(6.24)*
(Despite that)	*(0.92)*	*(1.26)*	(0.73)	*(0.37)*	(1.97)	*(0.92)*
In any case	22.18	6.77	36.35	36.62	9.40	19.79
In spite of this/ that/etc.	27.25	5.42	29.49	39.77	26.88	28.52
Still	9.71	2.13	3.11	27.17	7.99	8.35
Subtotal	**383.01**	**590.52**	**316.21**	**571.82**	**356.08**	**316.74**
TOTAL	**2,139.70**	**2,202.25**	**3,027.67**	**2,091.23**	**1,487.04**	**2,179.10**

Causal/Resultative LAs

LAs	Overall	Speaking	Academic	Fiction	News	Other
(General Causal)						
Accordingly	22.86	5.52	61.53	5.25	7.61	24.70
As a consequence (of)	8.67	2.42	20.74	1.17	3.29	10.20
(With of)	*(4.31)*	*(1.45)*	*(11.47)*	*(0.43)*	*(1.41)*	*(0.09)*
(Without of)	*(4.36)*	*(0.97)*	*(9.27)*	*(0.74)*	*(1.88)*	*(10.11)*
As a result (of)	79.78	37.35	134.62	8.95	64.02	103.48
(With of)	*(61.53)*	*(26.03)*	*(93.28)*	*(4.51)*	*(40.20)*	*(64.25)*
(Without of)	*(18.25)*	*(11.32)*	*(41.34)*	*(4.44)*	*(23.82)*	*(39.23)*
Because of it/this/ that	0.06	0.00	0.00	0.13	0.00	0.05
Consequently	24.90	7.64	60.08	5.06	5.45	29.85
In consequence	5.44	1.35	11.73	1.91	1.22	6.77
Hence	46.84	6.19	130.14	9.57	11.09	51.95
Naturally	41.32	17.08	48.80	52.36	20.12	47.35
(Sentence initial)	*(7.56)*	*(2.13)*	*(6.35)*	*(13.65)*	*(4.04)*	*(8.62)*
So	744.33	2,684.95	359.92	855.76	358.05	545.93
(Sentence initial)	*(371)*	*(1,725.21)*	*(138.32)*	*(308.49)*	*(176.54)*	*(226.89)*
(After a comma)	*(326.27)*	*(880.51)*	*(170.14)*	*(417.60)*	*(165.44)*	*(274.91)*
(In "and so" sentence initial)	*(13.41)*	*(48.36)*	*(5.12)*	*(20.56)*	*(5.17)*	*(8.28)*
(In "and so" not sentence initial)	*(33.65)*	*(30.87)*	*(46.34)*	*(37.11)*	*(10.90)*	*(35.85)*

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(General Causal)						
Therefore	229.83	152.11	550.76	35.75	52.83	261.45
Thus	202.25	8.13	582.65	35.81	37.32	226
Subtotal	**1,406.28**	**2,922.74**	**1,960.97**	**1,011.72**	**561.00**	**1,307.73**
(Conditional Causal)						
All things considered	0.33	0.20	0.26	0.94	0.10	0.25
In such a case/ cases	3.37	0.00	12.06	0.61	0.47	3.02
In that case	9.37	17.13	19.44	13.83	2.16	4.73
Otherwise	86.49	87.57	135.36	62.80	51.23	90.50
Then *(often used with "if")*	344.44	429.48	293.92	743.49	141.17	256.16
Subtotal	**444.00**	**534.38**	**461.04**	**821.67**	**195.13**	**345.66**
TOTAL	**1,850.28**	**3,457.12**	**2,422.01**	**1,833.39**	**756.13**	**1,663.39**

Sequential LAs

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Enumerative/Listing)						
Afterwards	44.46	45.26	18.92	66.63	58.47	44.08
Eventually	88.60	58.83	75.05	76.51	81.59	110.77
(Sentence initial)	*(9.40)*	*(5.71)*	*(5.77)*	*(14.20)*	*(6.02)*	*(11.06)*
First/Firstly	72.19	49.97	140.38	54.72	35.74	73.14
(First)	*(55.10)*	*(30.55)*	*(101.95)*	*(52.37)*	*(29.91)*	*(54.57)*
(Firstly)	*(17.09)*	*(17.42)*	*(38.43)*	*(2.35)*	*(5.83)*	*(18.57)*
First and foremost	2.47	1.55	3.31	0.74	1.90	3.29
First of all	13.81	74.12	10.16	4.26	3.87	7.80
In the first place	19.18	23.80	25.67	23.40	13.15	16.73
(Sentence initial)	*(4.85)*	*(5.42)*	*(9.92)*	*(4.94)*	*(1.41)*	*(4.02)*
To begin with	5.90	6.10	8.23	6.24	1.5	6.29
Second/Secondly	43.26	25.93	113.29	6.18	11.09	46.47
(Second)	*(15.05)*	*(0.77)*	*(42)*	*(0.99)*	*(4.98)*	*(17.33)*
(Secondly)	*(28.21)*	*(25.16)*	*(71.29)*	*(5.19)*	*(6.11)*	*(29.14)*

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(Enumerative/Listing)						
Third/Thirdly	12.93	6.10	36.87	1.85	3.29	13.73
(Third)	*(5.10)*	*(0.77)*	*(14.77)*	*(0.62)*	*(1.97)*	*(6.02)*
(Thirdly)	*(7.83)*	*(5.91)*	*(22.10)*	*(1.23)*	*(1.32)*	*(7.71)*
Fourth/Fourthly	2.79	1.45	6.42	0.49	0.56	2.43
(Fourth)	*(1.42)*	*(0.09)*	*(4.47)*	*(0.24)*	*(0.18)*	*(1.45)*
(Fourthly)	*(1.37)*	*(1.16)*	*(2.95)*	*(0.25)*	*(0.38)*	*(0.98)*
Finally	125.82	47.61	139.15	153.53	110.26	139.62
(Sentence initial)	*(41.05)*	*(10.06)*	*(79.59)*	*(25.81)*	*(16.92)*	*(48.31)*
Last/Lastly	5.20	5.82	9.46	2.34	1.23	5.87
(Last)	*(0.36)*	*(0.10)*	*(0.52)*	*(0.19)*	*(0.09)*	*(0.51)*
(Lastly)	*(4.31)*	*(5.22)*	*(8.55)*	*(1.98)*	*(0.66)*	*(4.58)*
(Last but not least)	*(0.53)*	*(0.50)*	*(0.39)*	*(0.17)*	*(0.48)*	*(0.78)*
Last of all	0.27	0.19	0.06	0.68	0.19	0.22
Next	6.83	7.39	7.26	6.13	4.10	9.09
Then	491.18	1,136.31	184.06	1,091.76	292.73	343.59
(Sentence initial)	*(174.87)*	*(129.92)*	*(51.52)*	*(529.36)*	*(126.06)*	*(130.25)*
(In "and then" sentence initial)	*(43.90)*	*(242.09)*	*(2.27)*	*(83.67)*	*(10.36)*	*(8.62)*
(In "and then")	*(272.41)*	*(764.30)*	*(130.27)*	*(478.73)*	*(156.31)*	*(204.72)*
Subtotal	**934.89**	**1,490.43**	**778.29**	**1,495.46**	**619.67**	**823.12**
(*Simultaneous*)						
At the same time	31.58	24.02	36.56	27.11	23.12	39.35
In the meantime	12.18	7.16	8.10	12.29	15.42	14.51
(Sentence initial)	*(7.12)*	*(0.97)*	*(4.28)*	*(5.93)*	*(10.15)*	*(9.55)*
Meanwhile	47.92	8.42	23.27	22.35	134.52	55.31
Subtotal	**91.68**	**39.60**	**67.93**	**61.75**	**173.06**	**109.17**
(*Summative*)						
All in all	3.19	2.32	1.56	3.33	2.35	4.26
In a word	1.55	0.87	3.76	1.73	0.49	1.22
In conclusion	2.14	0.77	9.01	0.31	0.28	2.04
In short	12.39	3.48	20.67	3.94	24.44	12.44
In summary/sum	2.39	0.97	10.80	0.18	0.47	4.99
To conclude	0.49	0.58	1.49	0.19	0.00	0.38

(continued)

LAs	Overall	Speaking	Academic	Fiction	News	Other
(*Summative*)						
To sum up	0.49	0.19	1.10	0.10	0.09	0.64
To summarize	0.48	0.29	0.65	0.00	0.00	0.41
Subtotal	**23.12**	**9.47**	**49.04**	**9.78**	**28.12**	**26.38**
(*Transitional to another topic, etc.*)						
By the by	0.24	1.64	0.03	0.74	0.19	0.07
By the way	6.34	10.34	0.84	19.70	2.44	3.75
Incidentally	6.76	3.48	6.35	5.00	6.67	8.66
Subtotal	**13.34**	**15.46**	**7.22**	**25.44**	**9.30**	**12.48**
TOTAL	**1,063.03**	**1,554.96**	**902.48**	**1,592.43**	**830.15**	**971.15**

APPENDIX II

A Complete List of LAs by Frequency

Band 1 *(27 in total) (with frequency of 50 and above per million words)*	
Additive	again, also, of course, in addition (to), too, for example, for instance
Adversative	however, yet, nevertheless, of course, though, in fact, on the other hand, instead, anyway, despite N/this/that
Causal/Resultative	as a result (of), so, therefore, thus, otherwise, then
Sequential	eventually, first/firstly, finally, then
Band 2 *(34 in total) (with frequency of 10 through 49.99 per million words)*	
Additive	above all, as I/they/you say, besides, furthermore, moreover, in other words, namely, alternatively, likewise, similarly
Adversative	at the same time, nonetheless, actually, in/by comparison, in/by contrast, in reality, rather, after all, all the same, in any case, in spite of this/that
Causal/Resultative	accordingly, consequently, hence, naturally
Sequential	afterwards, first of all, in the first place, second/secondly, third/thirdly, at the same time, in the meantime, meanwhile, in short

(continued)

Band 3 *(49.8 in total) (with frequency under 10 per million words)*	
Additive	additionally, as a matter of fact, as well, further, to crown it all, not to mention, to cap it all, what's (is) more, i.e., that is, that is to say, for one thing, to put it another way, to put it bluntly/mildly, what I'm saying is, what I mean is, which is to say, by the same token, correspondingly
Adversative	then again, as a matter of fact, conversely, on the contrary, admittedly, anyhow, at any rate, still
Causal/Resultative	all things considered, as a consequence (of), because of it/this/that, in consequence, in such a case/cases, in that case
Sequential	first and foremost, to begin with, fourth/fourthly, last of all, last/lastly, next, all in all, in a word, in conclusion, in summary/sum, to conclude, to sum up, to summarize, by the by, by the way, incidentally

Chapter 17

A Corpus Study of the Most Frequently-Used English Phrasal Verbs and Its Pedagogical Implications

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INTRODUCTION

Because of their extremely high frequency in the English language and the great difficulty they present to language learners, phrasal verbs (PVs) have long been a subject of interest and importance in English as a foreign language (EFL) or English as a second language (ESL) teaching and research, as evidenced by the many publications on the topic (Bolinger, 1971; Cordon & Kelly, 2002; Darwin & Gray, 1999; Gardner & Davies, 2007; Liao & Fukuya, 2004; McCarthy & O'Dell, 2004; Side, 1990; Wyss, 2003). The unique challenge for teaching PVs is that, although PVs are ubiquitous in the English language, EFL or ESL speakers, especially those with a lower and intermediate level of proficiency, consistently avoid using them (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993; Liao & Fukuya, 2004). The reasons for this avoidance are many, including cross-linguistic differences and the complexity of syntactic and semantic structures of PVs (Dagut & Laufer, 1985; Hulstijn & Marchena, 1989; Laufer & Eliasson, 1993). The enormous number of PVs in English also contributes to the problem, because it makes learners feel overwhelmed, not knowing which ones to learn. Thus identifying the most useful PVs is paramount for language learning purposes. Although the answer to the question of which PVs are useful may vary depending on learners' objectives and learning contexts, frequency is usually a good criterion for determining usefulness. This is because, in general, highly frequent PVs are more useful than those with very low frequency. There have been two corpus-based frequency studies of English PVs (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Gardner & Davies, 2007), and both have provided valuable information

about PVs and their distribution patterns. Yet, there are important limitations in each of the two studies. It is important, however, to point out that the limitations are not due to any oversight on the part of the scholars who did the studies but simply the result of their specific foci and space constraints.

Being a small section of a comprehensive book on English grammar, Biber, et al.'s (1999) treatment of PVs is limited largely to a small set of PVs (31 in total). Gardner & Davies' (2007) work, though covering many more PVs than Biber, et al.'s work, has three limitations of its own. First, their list of the most frequent PVs (a total of 100 items) contains only PVs made up of the top 20 PV-producing lexical verbs (e.g., *come*, *go*, *get*, and *take*). In other words, the list does not include highly frequent PVs formed by verbs outside the top 20 PV-producing ones (e.g., *keep up* is not on the list because *keep* is not one of the top 20 PV-producing verbs). As a result, their study, although offering new insights about PVs (e.g., a very small group of lexical verbs make up a majority of PVs), does not provide a thorough account of the most frequent PVs. Second, with the British National Corpus (BNC) as the data source, their study deals exclusively with British English. It remains an interesting question whether their findings are also true of any other major varieties of English. In fact, in their conclusion, Gardner and Davies themselves explicitly called for the need to test the validity of their list "against other megacorpora" (p.354). Third, limited by space, their study did not render a cross-register examination of the frequently used PVs. Such cross-register information is, however, very important for language learning purposes, because it indicates the contexts where specific PVs are and are not typical. Gardner and Davies also explicitly recommended "a reanalysis of the [PV] lists across major registers (e.g., spoken versus written English)" (p.354). In order to help fill in the aforementioned information gaps about PVs, the present study aims to offer a comparative investigation of the most frequently used PVs between American and British English and an examination of the usage information of these frequently used PVs across registers in American English.

DEFINITION OF PHRASAL VERB

For any study of PVs, the definition of PV is often the first order of business. Yet, what constitutes a PV and how to classify PVs have long been topics of debate. Many different theories have been proposed, and they differ largely over what syntactic and semantic features define a PV and how such features should be used to classify PVs (Biber, et al., 1999; Celce-Murcia & Larsen-Freeman,

1999; Darwin & Gray, 1999; Gardner & Davies, 2007; Quirk, Greenbaum, Leech, & Svartvik, 1985). However, many of the differences among the theories are quite minuscule, especially from a language learner's perspective. As Gardner & Davies (2007, p.341) correctly note, "if even the linguists and grammarians struggle with nuances of PV definitions, of what instructional value could such distinctions be for the average second language learner?" Furthermore, because of the purposes of the present study, there is little need and room for a lengthy review of the various definitions that have been proposed so far. This study had two main purposes: (1) to examine in the Corpus of Contemporary American English (COCA) the frequencies of the most common PVs and to compare the results with those reported in Biber, et al. (1999) and Gardner & Davies (2007); and (2) to conduct a cross-register distribution analysis of the PVs in COCA and to compare the results with those of the study by Biber, et al. In order to ensure a meaningful comparison between the findings of this study and those of the other two, this study uses Gardner & Davies' (2007) definition of VP: any two-part verb "consisting of a lexical verb (LV) proper ... followed by an adverbial particle (tagged as AVP) that is either contiguous (adjacent) to that verb or noncontiguous (i.e., separated by one or more intervening words)" (p.341). The reason for using Gardner and Davies' definition rather than Biber, et al.'s is twofold. First, it is simpler, because it involves only one syntactic criterion: "a verb plus an AVP." In contrast, Biber, et al.'s definition includes an additional semantic component: PVs must "have meanings beyond the separate meanings of the two parts [i.e., the verb and the AVP]" as in the case of "*come on, shut up ...* " whereas verb+AVP combinations in which "the verb and the adverb have their own meanings" are "free combinations like *come back, come down ...* " (Biber, et al., 1999, p.404). The application of this semantic criterion is not always straightforward and often involves some subjective judgments. Of course, Gardner & Davies' syntactic criterion is not always simple either, because whether a verb particle should be classified as an AVP, regular adverb, or preposition is sometimes open to debate, an issue I address later. The second reason for using Gardner and Davies' definition is that, as is shown next, a majority of the most frequent PVs examined in this study came from Gardner and Davies' study.

METHOD

Corpora Used

As mentioned earlier, the main corpus used for this study was COCA,

a large free online corpus developed by Professor Mark Davies of Brigham Young University. When this study was conducted, COCA consisted of 386.89 million words via data gathered from 1990 to 2008, that is, an average of approximately 20 million words from each of the 19 years. The corpus contains five sub-corpora: spoken, fiction, magazine, newspaper, and academic writing, with each sub-corpus contributing an equal amount of data (4 million words per sub-corpus per year). The corpus is also user-friendly. Its search engine allows the user to perform, among other things, the search and comparison of "the frequency of words, phrases and grammatical constructions" (Davies, 2008). Besides COCA, the 100.47-million-word BNC was also used both indirectly and directly: The frequency results of the 100 most common PVs in the BNC reported in Gardner and Davies' study were compared with the PVs' frequencies in COCA, and I queried the BNC directly through Davies' (2005) BYU interface for the frequency information of the other PVs that are not on Gardener and Davies' list of the 100 most frequent PVs. Furthermore, because the results of Biber, et al.'s study were also used for comparison in this study, the corpus they used, the 40-million-word Longman Spoken and Written English (LSWE) corpus, was also indirectly used in this study.

To help the reader better understand the cross-corpora comparisons to be rendered in the Findings and Discussion section, some relevant background information about the LSWE and the BNC is given here. The spoken part of the LSWE consists primarily of face-to-face conversation (see Biber, et al., 1999, pp.29–30). Similarly, a very large portion of the spoken sub-corpus of the BNC is composed of such conversations. In fact, the British English portion of the LSWE is included in the BNC. In contrast, the spoken part of COCA consists mostly of TV or radio broadcasting speech.

Data Gathering and Data Reporting or Analysis Methods

Querying for the frequency of a PV is a challenging task. One cannot accomplish the search by simply entering the lexical verb lemma of a PV in the form of [verb] plus its particle (e.g., "[go] on"), because not every one of the tokens generated by such a search is a phrasal verb. For example, the "[go] on" entry may yield non-PV tokens such as "We typically go on Mondays" where "on" is a preposition in the time adverbial phrase "on Mondays," not an adverbial particle (AVP) of *go*. (The lemma search function helps generate the tokens of the various forms of the verb, e.g., *go/goes/going/went/gone* for the lemma *go*.) Thus, to ensure an accurate count

of all the tokens of a PV, sophisticated query methods are called for. One such method is found in Gardner & Davies' (2007) study. They imported the entire tagged BNC data set into the Microsoft SQL server, a relational data program that can help identify all the instances of PVs. This method was not used in this study, however, because COCA does not make its entire tagged data set accessible to the public. Instead, this study employed basically a four-step procedure using the existing search functions in COCA's interface. This procedure, though more labor intensive, proved to be functional and fundamentally accurate.

The first step was the search for all the PV tokens of a lexical lemma. This was done by entering the verb lemma in the form of [verb] plus [RP*] (RP is the search code for AVPs in COCA and the wildcard * stands for any AVPs). For example, for all the PV tokens of the lexical verb lemma [go], "[go] [RP*]" is entered. The query will generate all the "*go* plus AVP" PV tokens, including *go on, go off*, and so forth. The second step was a search of the tokens of transitive PVs used with their AVPs separated by one intervening word. This was carried out by entering for search "[verb] * [RP*], with the wildcard * between the verb and the AVP standing for any intervening word. The third step was the search of the tokens of separable PVs with two intervening words (e.g., *look the word up*). This task was performed by entering "[verb] ** [RP*]". No search was done, however, for instances of PVs with their AVPs separated by three or more intervening words. This is because PVs so used are rare, and a search for them will yield "many false PVs" (Gardner & Davies, 2007, pp.344–345). Furthermore, Gardner and Davies did not include such tokens, making it necessary to exclude them in this study to ensure a meaningful comparison. In steps 2 and 3, I read through the result lines to exclude any false tokens. All the aforementioned searches were performed with the cross-section comparison search function in COCA activated so that the search results included the PVs' frequency distribution in each of the five registers. The last step was the recording and tabulation of the query results, using Excel spreadsheets. For each PV, the frequency results of its various forms in the five registers were entered, and the subtotal and total frequencies were computed.

As far as the frequency counting or reporting method is concerned, raw frequency numbers cannot be used for comparison purposes, because of the large differences in size among the corpora used in the study. Instead, a *number of tokens per number of words* norming method must be employed. For examining data in large corpora, researchers typically use the number of tokens per million words (PMWs) method (cf. Biber, Conrad, & Reppen,

1998; Biber, et al., 1999; Liu, 2003, 2008; Moon, 1998). Furthermore, given that this method was already used in Biber, et al. (1999), it was adopted for this study for the reporting of most of the data. However, in the statistical analysis (i.e., the Chi-square and the dispersion tests) of the results to determine whether there were significant differences among the PVs' distributions, I used only raw observed frequencies, because normalized data are inappropriate for such statistical tests.

PVs Examined

In order to render a comparison of the results of this study with those of Biber, et al. (1999) and Gardner & Davies (2007), I queried COCA for the frequency of all the PVs in their lists. There were a total of 31 PVs in Biber, et al., each had at least 40 tokens PMWs in at least one register of the LSWE. Gardner and Davies' list consists of 100 items made up of the top 20 PV-producing verbs. 27 of the 31 in Biber, et al.'s list overlap, however, with those in Gardner and Davies' list. In other words, only 4 of Biber, et al's 31 PVs are not in Gardner and Davies' list. Of these 4, one is *go ahead.* It is not in Gardner and Davies' list because *ahead* is not tagged as an AVP in the BNC (or in COCA), but rather it is tagged as a regular adverb. The other three PVs not on Gardner and Davies' list are *shut up*, *stand up*, and *run out* because *run*, *shut*, and *stand* are not among the top 20 PV-producing lexical verbs that Gardner and Davies identified. Because of the overlapping of 27 items, the total number of PVs from Biber, et al.'s and Gardner and Davies' studies was 104, not 131.

Besides searching these 104 PVs in COCA, I also queried the COCA and the BNC for the other most common PVs. To do so, I used the four most recent comprehensive PV dictionaries as a search list guide: *Cambridge International Dictionary of Phrasal Verbs* (1997), with over 4,500 entries; *Longman Phrasal Verbs Dictionary* (2000), with over 5,000 PVs; *NTC's Dictionary of Phrasal Verbs and Other Idiomatic Verbal Phrases* compiled by Spears (1993), with 7,634 entries; and *Oxford Phrasal Verbs Dictionary for Learners of English* (2001), with over 6,000 entries. I searched a total of 8,847 PVs, 5,933 of which were from the dictionaries, whereas 2,914 were not. The latter were not searched intentionally but were the by-product of my query method [verb] [RP*] which would automatically return all the PVs of the verb being queried, including those not in the dictionaries. For example, my queries [drive] [RP*] returned not only the intended PVs from the dictionaries, for example, *drive away/up/down/off*, but also those not listed in the dictionaries, for example,

drive about/along/by/round. Considering the large number of PVs listed in each of the four dictionaries, one may wonder why only 5,933 PVs were queried. The reasons were (1) many of the entries in the dictionaries overlap, and (2) the dictionaries include *verb+preposition* structures (e.g., abide *by* and accede *to*) that are not considered PVs relative to the definition used in this study.

According to Gardner & Davies' (2007) search, there are a total of 12,508 PV lemmas in the BNC. This means that my query of 8,847 left 3,661 PVs unsearched. This should not, however, be a concern for the following reasons. First, the purpose of my study was to identify the most frequently used PVs, and the criterion for inclusion in my list was 10 tokens PMWs. As the immediately following discussion shows, only 152 out of the 8,847 made the list. Most PVs simply do not have the required frequency. Second, my search covered all the lexical verb lemmas that had a total of 1,000 tokens in the BNC or 3,869 in COCA, because this was the minimum number that would give the verbs the potential for yielding the required number of PV tokens to make the most common PV list. Finally, because of tagging errors, not all of the 12,508 PV lemmas are PVs.

As already stated, the criterion for a PV to make the most frequently used list in this study was 10 tokens PMWs in either COCA or the BNC. The rationale for using this criterion was threefold. First, 73 (70%) of the 104 PVs on the Biber, et al. and Gardner and Davies' combined list each have 10 tokens or more PMWs; only 31 on Gardner and Davies' list each show a frequency fewer than 10 PMWs. Second, in order to be truly meaningful, a list of the most frequently used PVs should not be too long. Third, as Gardner & Davies (2007) reported, the 100 frequently used PVs they identified already "account for more than half (51.4%) of all the PV occurrences in the BNC" (p.351).[1] Using this ten-token PMWs criterion, my search identified 48 additional most frequently-used PVs. The search results also showed that these 48 PVs and the 4 from Biber, et al. that are not on Gardner and Davies' list together account for another 12.17% of all the PV occurrences in the BNC. This means that the 152 most frequently-used PVs compiled in this study, while comprising only 1.2% of the total 12,508 PV lemmas in the BNC, cover 62.95% of all the total 512,305 PV occurrences. This helps demonstrate the representativeness and hence the usefulness of these most-frequently used PVs. Of course, there are several limitations that should be considered when using this list for learning/teaching purposes, such as the fact that it is a lemmatized list and that many of the PVs have multiple meanings, two very important issues I will address in the next section.

FINDINGS AND DISCUSSION

Most Frequently Used Phrasal Verbs: American English Versus British English

This study has uncovered the frequency information of 152 PVs, including the 100 from the Gardner and Davies' list, the 4 from Biber, et al. that are not in Gardner and Davies' list,[2] and the 48 additional most frequent PVs this study has identified. The frequency information is reported in a table format in the Appendix, with the PVs listed in order of their frequency in COCA. To allow for an easy comparison of the PVs' frequency in COCA with their frequency in the BNC, their frequency and rank order information in the BNC is also provided (in the second and third columns from the right). It is necessary to note that the total number of PVs in the Appendix is 150, not 152, because I combined the PVs in each of the following two related pairs that were reported as individual PVs in Gardner & Davies' study (2007): *look around* and *look round*; *turn around* and *turn round*. Gardner and Davies also have *come round* and *go round* on their list but not *come around* and *go around*, given that the latter forms are the dominant uses in American English, I have included and combined them with the former in this study. The reason for combining the two forms in each pair is that they are synonymous and that they represent mainly a usage variation between American and British English, an issue that is discussed later.

Before proceeding to a detailed comparison of the PVs' frequency and usage patterns in the two corpora, I briefly discuss how some of the results of this study support Biber, et al.'s (1999) and Gardner & Davies' (2007) findings about an interesting aspect of PVs: A relatively small number of lexical verbs and AVPs form the majority of the PVs in English. Biber, et al. identified eight verbs and six adverbs as the most productive in forming PVs. Gardner and Davies identified the top 20 PV-producing verbs and the 4 most "prolific" AVPs that help form more than half (53.7%) of all the PVs in the BNC (2007, p.347).[3] The same pattern is found in the lexical verbs and the AVPs in the 52 additional most frequent PVs (48 identified in this study and 4 from Biber, et al.). For example, *out* and *up* are each the AVPs in 19 of the 52 PVs, that is, they combine for the AVPs of 38 (73.08%) of the 52 PVs. Concerning the verbs in these 52 PVs, it is important to first recall that all of them are outside the top 20 PV-producing lexical verbs. Yet even these less productive verbs show some concentrated use in PVs. One of them (*hang*) appears in three of the 52 PVs, and five (*fill*, *keep*, *pull*, *show*, *stand*) each appear in two.

To compare the PVs' frequency distribution patterns in the two corpora, it is necessary to note that the data of the two corpora do not come from the same time period. Although the BNC covers the 1980s to 1993, COCA extends from 1990 to the present, that is, COCA starts basically where the BNC ends. This difference in time periods could be responsible for some of the PV usage variations between the two corpora, which is discussed later.[4] To compare the general frequency patterns of the PVs in the two corpora and to determine whether there is any significant difference calls for a Chi-square test of the raw observed frequencies. Given the large difference in size between the two corpora, a one-way Chi-square test of the observed frequencies of the PVs from the two corpora would not make sense. To account for the effect of the difference in corpus size, I opted for a two-way Chi-square test with the total observed frequencies of the 150 PVs measured against the total number of words of their respective corpora minus the total number of tokens of the 150 PVs. In this way, the problem of difference in corpus size was controlled, allowing the Chi-square test to determine whether the relative frequency of the PVs was statistically equal in both corpora. The results are reported in Table 1 where I also include at the bottom the PVs' frequencies PMWs in the two corpora for easier comparison.

Table 1: A comparison of the most common PVs' overall frequency patterns in COCA and the BNC

	COCA	BNC	*df*	*Chi-Square* (χ^2)	*P*	Cramer's V
Total observed frequency of the 150 PVs	1,424,836 (+2.7%)*	322,517 (−10.5%)*				
Total number of words minus the 150 PVs' total tokens	385,465,164	100,147,483	1	4,988.65	0.0001	0.0032
Frequency PMWs of the 150 PVs	3,682.79	3,210.09				

Note: COCA=Corpus of Contemporary American English; BNC=British National Corpus; PVs=phrasal verbs.

* indicates the percentage that the observed frequency deviated from the expected frequency.

A close look at the test results indicates that, although there is a significant difference between the frequencies of the PVs in the two corpora, the difference is actually minuscule, as evidenced by the very small *effect size*, a Cramer's V of only 0.0032, and also by the percentages of deviations (PDs) of the observed frequencies from the expected frequencies, with the frequency in COCA being merely 2.7% higher than expected and the frequency in the BNC being only 10.5% lower than expected. The effect size is extremely important for statistical analysis in corpus research, because, as Gries (2010, p.286) explained, "the large sample sizes that many contemporary corpora provide basically guarantee that even minuscule effects will be highly significant." Thus the significant difference shown by the Chi-square test is very likely the result of the large size of the two corpora. Furthermore, a comparison of all the individual PVs' frequency rank order in COCA against their rank order in the BNC (the results reported in the last column of the Appendix) indicates that the PVs' frequency rank orders in the two corpora are fairly similar. For example, for each of the following five PVs, its frequency orders in both corpora are identical: *go on* 1st, *come in* 14th, *get back* 19th, *bring back* 44th, and *turn down* 94th. (Incidentally, *go on* is also the most frequent one in Biber, et al.'s study.) 8 out of the top 10 PVs in the COCA list also make the top 10 in the BNC list. 46 (30.67%) of the 150 PVs show only a single digit difference between their rank orders in the two corpora (e.g., *pick up* ranks 2nd in COCA and 3rd in the BNC, a rank difference of 1).[5] 37 (24.67%) record a rank order difference between 10 and 19. However, 67 (44.67%) display a rank order difference of 20 or above, an issue I return to later.

Given the different time periods the BNC and COCA each cover, the absence of a truly large difference in PV use between the two corpora may suggest that PV use has remained fairly stable. This fact may in turn imply that the list of the most frequently used PVs produced in this study may withstand the test of time. In that case, What about the differences in PV uses found between the two corpora, especially the rank disparity of 20 or more found in 67 of the PVs? What might be the cause(s) for the differences? To answer these questions, we should first understand how and to what extent the frequencies and uses of these PVs in the two corpora differ. A close examination reveals that, although the differences of their rank orders between the two corpora offer some interesting information, the difference between a PV's frequencies (numbers of tokens) in the two corpora is a much more informative indicator. For example, the difference between the rank orders of *come up* in the two

corpora is only 5 (4th in COCA and 9th in the BNC), but its frequency difference in the two corpora is 55.45 PMWs. In contrast, *set off* has a rank order difference of 49 but a frequency difference of only 6.81 PMWs. Therefore, I decided to use frequency as the main criterion to examine the individual PVs' distribution differences in the two corpora.

Specifically, I tested for any significant difference between the raw frequencies of those PVs whose frequencies in the two corpora varied by 10 or more PMWs. There were a total of 39 such PVs. Given that the two corpora differ tremendously in size, I conducted a two-way Chi-square test employing exactly the same method used for testing the total frequency difference of the 150 PVs in the two corpora reported earlier in Table 1. Because of the large size of the corpora, the Chi-square results for the 39 PVs were all significant, but their Cramer's Vs were very small, ranging from 0.0006 to 0.0019. In order to have a shorter and more focused list of PVs which show a truly noticeable difference in their distributions between American and British English, I excluded from the list those PVs with Cramer's Vs lower than 0.001. This resulted in a list of 30 PVs. 20 are significantly more common in American English: *check out*, *come out*, *come up*, *figure out*, *get out*, *go ahead*, *grow up*, *hang out*, *hold up*, *lay out*, *pick up*, *pull out*, *show up*, *shut down*, *take off*, *end up*, *turn out*, *take on*, *turn a/round*, and *wake up* (cf. the Appendix table for their rank orders or frequencies in the two corpora). 10 appear significantly more frequently in British English: *build up*, *carry on*, *fill in*, *get on*, *set out*, *set up*, *sort out*, *take over*, *take up*, and *turn up*. Although the reasons for some of the PVs' prominent use in one of the two English varieties are difficult to determine, the causes for some can be attributed to either usage differences between the two varieties of English or the increase of use in American English, for, as mentioned earlier, COCA starts where the BNC ends in terms of the time periods covered.

Regarding usage differences, an examination of some of the tokens of the PVs confirms the following information indicated by some of the PV dictionaries. The significantly larger number of tokens of *fill in* in the BNC appears related to the fact that British English typically uses *fill in* in "*fill in* or *fill something in* a form/document," whereas American English generally uses *fill out* in such cases. The quadrupled use of *check out* in COCA compared to that in the BNC is the result of the multiple functions or meanings of the PV in American English that are not found in British English, such as its meaning "paying for things" at a store and "borrowing items from a library." Furthermore, the far less frequent use of *shut down* in

the BNC is mostly due to the fact that, in British English, *shut up* is often used to express the meaning of "closing a business temporarily," a meaning almost always expressed by *shut down* in American English. This fact also helps explain the lower frequency and rank order of *shut up* in COCA.

Another noticeable use difference between American and British English, as mentioned earlier, relates to the use of *around/round* in the PVs such as *come around/round*, *go around/round*, *look around/round*, and *turn around/round*. The distribution of *around/round* in these PVs in the two corpora is reported in Table 2. The results demonstrate that, although it is true Americans prefer *around* and British speakers favor *round*, Americans' preference for *around* over *round* is much stronger than the British preference for *round* over *around*. The American use of *around* is more than 90% of the time in each of the four PVs, whereas the British use of *round* is in general much less than 90% of the time.

Concerning frequency differences likely caused by the increased use of certain PVs in American English, a query of COCA indicated that *check out*, *hang out*, *show up*, and *come up* each show a noticeable increase in number of tokens from 1990–1994 to 2005–2009. *Check out* increased by 102%, *hang out* by 52%, *show up* by 25%, and *come up* by 23%. Such substantial increases of the PVs in COCA may help explain their higher frequencies in COCA than in the BNC. Yet, because we do not have the British English data after the early 1990s, we cannot be certain whether the same increases would have also occurred in British English. In short, the analysis of the PVs' frequency patterns indicates that, although their general distribution patterns are very similar in both corpora, there are some differences concerning some specific PVs because of (1) usage differences between American and British English and/or (2) increased use in American English. Knowledge of these differences is useful to English language educators when deciding which PVs should be taught and learned in which English variety.

Table 2: Distribution of the PV particles *around/round* in COCA and the BNC

PV		In COCA		In BNC	
Verb	**AVP**	**Tokens PMWs**	**Percentage**	**Tokens PMWs**	**Percentage**
come	*around*	6.11	94%	1.40	11%
	round	0.39	6%	11.02	89%
go	*around*	9.37	93%	4.36	24%
	round	0.70	7%	13.60	76%

(continued)

PV		In COCA		In BNC	
Verb	**AVP**	**Tokens PMWs**	**Percentage**	**Tokens PMWs**	**Percentage**
look	*around*	20.54	99%	7.76	53%
	round	0.21	1%	6.91	47%
turn	*around*	26.82	98%	4.21	27%
	round	0.55	2%	11.41	73%

Note: AVP=adverbial particle; PMWs=per million words.

Cross-Register Differences in the Use of PVs

To determine whether there is a significant difference in the overall raw frequency distributions of the 150 PVs among the five registers in COCA, I conducted a one-way Chi-square test and a dispersion/adjusted frequency test using Gries' (2008b) Dispersions2 program. This dispersion test yields, in addition to a series of adjusted frequencies, a deviation of proportion (DP) score, which theoretically can range from 0 to 1, but sometimes the number of parts of the corpus and other factors may prevent it from reaching the maximal value of 1. To address this problem, the test also gives a normalized DP score, shown as DP_{norm}, which is able to display the maximal value. The values of DP near 0 suggest that the frequencies of a linguistic item are distributed in proportion to the sizes of the corpus registers or parts, whereas high values, especially those near 1, signify that the frequencies of the linguistic item are distributed very unevenly across the registers. An adjusted frequency is a downwardly adjusted total frequency in proportion to the degree of the unevenness of the distribution of the linguistic item. The results of both the Chi-square and the dispersion tests are reported in Table 3. Besides the raw frequencies of the PVs, I have also reported the frequencies PMWs so the results can be compared with those of the Biber, et al. (1999) study. The result of the Chi-square test is very significant, with $p < 0.0001$, but the deviations of the PVs across the registers are not particularly high according to Gries's DP (0.214; 0.268_{norm}). It is important to note, however, that the specific percentage deviations of the observed frequencies of the PVs from the expected are fairly high: Whereas the observed frequencies in the spoken and fiction registers are, respectively, 44.34% and 66.12% higher than the expected, those in the magazine, newspaper, and academic registers are 18.36%, 21.02%, and 66.86% lower than the expected, respectively.

Table 3: The most frequent PVs' distribution across the registers and the results of a one-way Chi-square test and Gries's dispersion test

	Size (million)	PVs' Raw Frequency	Frequency PMWs
Spoken	78.82	411,326 (+44.34%)*	5,218.55
Fiction	74.88	449,720 (+66.12%)*	6,005.88
Magazine	80.66	244,270 (-18.36%)*	3,028.39
Newspaper	76.33	225,079 (-21.02%)*	2,948.76
Academic	76.20	94,441 (-66.86)*	1,239.38
Total	386.89	1,424,836 (1,339,479)**	3,683.74
df		4	
Chi-square χ^2		324,445.88	
p		0.0001	
Gries's DP		0.214 0.268_{norm}	

* the percentage the observed frequency deviated from the expected frequency
** Rosengren's adjusted frequency produced by Gries's Dispersions2 test.

It is thus clear from the test results that the PVs are much more common in fiction and spoken English than in magazines, newspapers, and, especially, academic writing. The results support the conclusion of Biber, et al. (1999, p.408) on the issue: "Overall, phrasal verbs are used most commonly in fiction and conversation; they are rare in academic prose. In fiction and conversation, phrasal verbs occur almost 2,000 times per million words." The only difference between the finding of Biber, et al. and my finding is the rate of occurrence. Although the PV frequency in fiction and conversation in their study is "almost 2,000 per million words," the rates in the two registers found in this study are almost three times that. The reason for this large difference between their number and mine appears, again, to be the narrower definition of PV used in their study, an issue explained earlier (Note 3). One can attribute the difference to this reason quite confidently, because the frequency numbers in my study and in Gardner & Davies' (2007) study are quite comparable, and our two studies used the same definition. In Gardner and Davies' study, the frequency of the top 100 PVs in the BNC is 278,780 or 2,788 PMWs (p.349), a number that would have been even higher if it had included those of the 50 PVs included in my study. Furthermore, given that the 2,788 PMWs frequency is the average that included the much lower

frequencies in the newspaper and academic writing registers, one can certainly expect the numbers in their spoken and fiction registers to go much higher than 2,788 PMWs.

Although the overall cross-register analysis provides information about the PVs' general distribution patterns, it does not offer information about the behavioral patterns of the individual PVs, especially those that actually occur more often in the registers other than in fiction or speech. Such information is very useful for language learning. Therefore, I conducted an analysis of each individual PV's raw observed frequencies across the five registers, using both a one-way Chi-square test and Gries' (2008b) Dispersions2 test. Although the Chi-square test reveals that every one of the 150 PVs showed a significant difference ($p < 0.001$) in its frequencies among the five registers, the dispersion test shows their DP_{norm} values vary substantially, ranging from 0.045 (in the case of *make up*) to 0.74 (in the case of *look up*).[6] This means that, of the 150 PVs, *make up* is distributed most evenly across the registers, whereas *look up* is distributed most unevenly. Based on their DPs, I divided the PVs into three groups: (1) fairly evenly distributed, with a DP_{norm} below 0.25 (65 of them or 43.33%), (2) not evenly distributed, with a DP_{norm} between 0.25 and 0.499 (68 or 45.33%), and (3) very unevenly distributed, with a DP_{norm} of 0.5 or above (17 or 11.33%). The latter two types combine for 85 (56.67%). Each PV's dispersion classification is shown in the Appendix with a superscript number 1, 2, or 3 after the PV.

Classifying PVs by dispersion pattern is very useful for language learning because, as Gries (2008a) showed in his literature review, the distributional range of lexical items has a great impact on second language (L2) learners' processing and learning of them. Items that boast a wider and more even distributional range are processed faster than those that have a narrow one, and hence they should be of higher priority for L2 learners. However, this does not mean one can overlook those unevenly distributed PVs in language learning. In fact, the latter PVs occur mostly in one or two registers, and, as such, they are actually very important for English for specific purposes (ESP) learners, who, because of their specific purpose of study, must focus on the register(s) in which these PVs appear most frequently. For example, *carry out* is an unevenly distributed PV because of its very high frequency in academic writing. For students studying academic English, it should thus be very high on their list of PVs to be learned. Before examining in detail the noticeable distribution patterns of the 85 significantly

unevenly distributed PVs, it is important again to note that the PVs reported here are lemmatized and many of them are polysemous, just as most PVs are in general. The distribution of the different meanings of a polysemous PV may vary significantly across registers.

For example, *make up* can mean, among other things, compose or constitute (e.g., "Women *make up* 22 percent of the rural labor force in Nicaragua ..."); decide, when used in "*make up* one's mind" ("Secretary Powell can *make up* his own mind"); compensate (for) (e.g., "The kids *make up* for their lack in experience with enthusiasm"); and fabricate ("Melanie *made up* that story").[7] I examined the meanings of the first 100 tokens of this PV in COCA's spoken and academic registers. A 2 by 5 Chi-square test of the meaning distributions (reported in Table 4) yielded a very significant result: $x^2(df\ 54)\ 5{,}104.52$, p, 0.0001, with a Cramer's V of 0.7229, indicating a clear, significant difference between the semantic distributions of *make up* in the two registers. Although the tokens in spoken English show a fairly even division among the four meanings, the tokens in academic writing mean mostly compose (79%). This finding suggests clearly that the cross-register distribution of the different meanings of a PV is also important information. Unfortunately, because of lack of space, this study is unable to offer a close examination of this important issue.

Table 4: Distribution of the major meanings of the first 100 tokens of *make up* in the spoken and academic registers

	Compensate	Compose	Decide	Fabricate	Other
Spoken	26	12	27	25	10
Academic	18	79	1	2	0

Furthermore, as lemmatized lexical items, the 150 PVs are listed without information regarding their uses in different tenses, for example, *make up* versus *made up* versus *making up*. This latter information is very important for language learners or teachers when deciding which form to focus on, because the dominant tenses in which specific PVs are used sometimes differ substantially. For instance, in COCA, although *turn out* is used roughly 50% of the time in the past tense, *go ahead* appears 93% of the time in the present tense. Thus PVs like *turn around* may be good items for instruction in teaching the past tense, whereas PVs like *go ahead* may be

best used for teaching the present tense. Again, for lack of space, this study is unable to offer a detailed treatment of the tense distribution of the PVs. Clearly, although the lemmatized list of the 150 PVs is a useful source for learning the most common PVs in general, English learners may still need to seek further semantic or usage information of the PVs when learning these PVs. There are some useful sources they can turn to for help in this regard, including PV dictionaries and online sources like the WordNet Search (Miller, 2008).

Concerning the distribution patterns of the 85 significantly unevenly or very unevenly distributed PVs, almost all of them appear primarily in fiction and spoken English, the two registers that record the highest overall use of PVs. 60 of the 85 (70.59%) occur mostly in fiction and 22 (25.88%) in the spoken registers. Only 3 (3.53%) appear significantly more frequently in the other three registers (two in academic writing and one in newspapers). Because of their rarity, the latter three deserve our attention first. The two PVs that occur mainly in academic writing are *bring about* and *carry out*. *Bring about* is used so predominantly in academic writing that its frequency in academic writing (27.44 PMWs) is many times (varying from 3 to 10 times) more than its frequencies in each of the other four registers. Also worth mentioning here is that *point out*, a fairly evenly distributed PV, registers its highest frequency in academic writing as well. It is important to note that *carry out* and *point out* are also found to be used most frequently in academic writing in the study by Biber, et al. (1999). The reason that *bring about* is not on their list seems to be that it does not have at least 40 tokens PMWs in any of the registers, the criterion of inclusion in their study. Biber, et al.'s (1999) analysis also shows that *take on*, *take up*, and *set up* are more common in academic writing than in conversation. However, in this study, only *take up* shows this pattern together with *set out*, likely because of the data in the spoken register of COCA are mostly from TV or radio programs, not from conversations, as was the case for Biber, et al.'s spoken corpus data. Obviously, all these PVs deserve attention in academic writing teaching materials. In addition, fairly evenly distributed PVs that have a substantial frequency in academic writing (e.g., *break down*, *carry on*, *follow up*, *make up*, *rule out*, and *sum up*) should also be considered.

The only significantly unevenly distributed PV that appears most frequently in newspapers is *pay off*, but there are several in the fairly evenly

distributed group that claim their highest frequency in the newspaper register: *grow up*, *take over*, *shut down*, *wind up*, *turn down*, *fill out*, and *come off*. Most of these PVs are expressions used to describe business dealings. As such, it is understandable that they often find their way into news. This finding helps illustrate the "field"-specific nature of the use of some PVs, an issue Celce-Murcia & Larsen-Freeman (1999, p.434) have addressed in some detail. Magazine is the only register in which none of the significantly unevenly distributed PVs is used most frequently. Yet, quite a few PVs (7) in the fairly evenly distributed group each record their highest frequency in this register, including *break down*, *break up*, *build up*, *check out*, *set up*, *sum up*, *stand out*, and *take on*. The fact that these PVs all come from the fairly evenly distributed group can perhaps be explained by the mixed nature of this register. Magazine articles cover a variety of topics, and different magazines have different target audiences, making their contents quite diverse.

The 60 significantly unevenly distributed PVs that occur most often in fiction are a very large group, but a majority of them (over 40) are movement or action expressions, for example, *look a/round*, *look up*, *sit down*, *stand up*, and *walk out*. Because describing human actions constitutes a very large part of fiction, it is truly befitting of fiction to make an extensive use of these action PVs. It is again important to note that some of these PVs are polysemous (e.g., *look up*), but they are used mostly as movement descriptions in fiction. Of the first 100 tokens of *look up* in the fiction register, 98 are about upward vision or head movement, as in the example "When Billy opened his eyes and *looked up*, all he could see out the windows were stars." Of course, not all action PVs appear most frequently in fiction. Some are more common in spoken English. For example, *come down*, *go in*, among others, are used most frequently in spoken English. In fact, the majority of the most frequent PVs in fiction also show a high degree of frequency in spoken English and vice versa, largely due to the fact that a substantial portion of fiction is made up of dialogues. Still, some action PVs occur almost exclusively in fiction, with just a few tokens (all in the single digits) in the other registers, including *call out*, *hang up*, and *sit back*, and they are largely mono-meaning, used for depicting actions. In contrast, polysemous PVs that can be used to either describe actions or express other meanings are common in both spoken English and fiction.

Another PV that bears some discussion here is *come on*. In Biber, et al.'s (1999) study, it is the most frequent PV in spoken English, but in COCA and

the BNC, *go on* is the most frequent spoken PV. What is particularly striking about *come on* is that its frequency in spoken English in the LSWE corpus (the corpus Biber, et al. used) is over 300 PMWs; 266.97 PMWs in the spoken part of BNC; but only 83.67 PMWs in the spoken register of COCA. The most likely explanation for its extremely high frequency in the LSWE and the BNC is that, as pointed out earlier, the data in the spoken register in the two corpora are primarily taken from face-to-face conversations, whereas the data in the spoken register of COCA consist mostly of public speech mediums like radio or TV broadcasting, a much more formal type of spoken language. The corpus examples of *come on* provided by Biber, et al. (1999), such as "*Come on*, let Andy do it" and "*Come on*, let's go" help demonstrate the conversational nature of their spoken corpus data.

CONCLUSION: IMPLICATIONS AND LIMITATIONS

This study has offered a comparative examination of the usage patterns of the most frequently used PVs in American and British English and across registers. Besides validating many of the results of Biber, et al.'s (1999) and Gardner & Davies' (2007) studies, it has provided some new information about the use of PVs and a comprehensive list of the most common PVs in American and British English, one that complements those offered by Biber, et al. and Gardner and Davies with more items and more usage information. In addition, it also presents a cross-register list of the most frequent PVs, showing in which register(s) each of the PVs is used primarily. English learners or teachers can elect to use the lists of the 150 most common PVs in ways that best meet their learning purposes. For example, for a language curriculum or program with a general learning purpose, either the American or the British overall frequency list may be used as a reference guide, depending on whether American or British English is chosen as the target English variety. For ESP programs, however, one of the register-specific frequency lists (e.g., newspapers or academic texts) can be used as the guide. Currently, the frequency order is based entirely on the PVs' overall frequency in COCA. To derive the correct frequency order of a register-specific list, one can copy the desired register list together with the PV items, place them in an Excel spreadsheet, and have the rank order adjusted according to the PVs' frequencies in the register using the sorting function. The following are some additional pedagogical implications.

1. Although there are some PV usage and frequency differences between American and British English, the most common PVs are generally rather similar between the two English varieties. Thus, except for those aforementioned usage differences, learners or teachers of English need not worry about the problem of learning PVs that are useful only in American or British English.
2. Although PVs that show a wider and more even distribution across registers usually should receive more attention and perhaps be learned first, unevenly distributed PVs may actually deserve special attention for ESP learners, because of their high frequency in the register(s) that are the ESP learners' focus.
3. Learners of English should be made aware that the use of PVs is register and field sensitive so they can approach PVs more effectively and appropriately. For students learning academic writing in English, it is important to know that, although PVs are generally not common in formal writing, there are a few PVs (e.g., *carry out* and *point out*) that are actually very useful in academic writing, and it will be to the students' advantage to gain command of them. Writing teachers may want to purposely include these PVs in their teaching.
4. Learners should focus mostly on polysemous or idiomatic PVs, because mono-meaning and literal meaning PVs are not only easy to understand but are limited in context and function, as shown in the usage patterns of action PVs uncovered in this study.
5. Learners should also understand that the various meanings and functions of polysemous PVs are also often register specific, as in the case of *make up* discussed earlier. Learners or teachers should consult various sources such as PV dictionaries and online sources like WordNet 3.0 to become familiar with the different meanings, especially the key meanings of the PVs they are learning.
6. Learners can also take advantage of free online corpora such as COCA and the BNC as useful sources for learning and practicing PVs, especially their different meanings. For example, students can enhance their ability in distinguishing the different meanings of a PV by going through concordance lines of a PV query to determine the meaning of each specific token. Such exposure to PVs can also help learners become more familiar with PVs and then more comfortable in using them, hence helping overcome their inclination to avoid PVs. Furthermore, some useful strategies for learning PVs have been suggested, such as studying the cognitive motivation of the use of the AVPs in PVs to help better grasp the meanings of PVs (Kövecses, Z. & Szabó, 1996) and examining the typical noun collocates of PVs to better understand and retain idiomatic PVs.

Limitations of the Study and Implications for Future Research

First, limited by space and research design, this study provides only the lemmatized most common PVs, and it does not provide an examination of the use of the various meanings of those polysemous PVs across various registers. A tense-specific list and an analysis of the various meanings of the PVs can help better understand how the various tenses and meanings of a PV are used, including information such as in which register or registers each of its tense forms and meanings is most frequently used. Second, as is the case in Biber, et al. (1999), the cross-register comparative study of PVs in this study covers only broad categories, offering little information on the PVs usage patterns in specific fields, such as air-traffic control. In the future, more field-specific comparative studies are needed.

Notes

1. It is necessary to note that there is an error in the frequency number of a PV in Gardner and Davies' data that has an implication for the total numbers they reported. In their 100 most common PV list, *carry out* is ranked as the 2nd most frequent PV, boasting a frequency of 10,798. This frequency number is unusually high and incorrect, based on my search and consultation with Mark Davies, one of the authors of the Gardner and Davies, article. The correct number is 4,180, which means that their reported frequency of this PV is 6,618 tokens over the actual frequency. This should also have resulted in an inflation of the total PV occurrences in the BNC by 6,618. Thus, with the 6,618 removed from both the token numbers of the 100 PVs (266,926 2 6,618) and the total token numbers of all the PV occurrences in the BNC (518,283 2 6,618), the tokens of the 100 PVs (260,168) should account for 50.78%, instead of the 51.7%, of the total PV tokens (512,305) in the BNC. These adjusted correct numbers are used in the discussion in the remainder of the article. Also, in the Appendix, the frequency number and order of *carry out* in the BNC list is adjusted accordingly (from 2nd to 24th).
2. One of them is *go ahead*. Even though it is not tagged as a PV, as mentioned earlier, I have included it not only because Biber, et al. (1999) did but also because I believe *ahead* is actually an AVP for the verb *go*, making the phrase a true PV.
3. Although most of the top PV-producing verbs and AVPs identified by Biber, et al. (1999) overlap with Gardner & Davies' (2007), the rank orders of the items between the two lists differ. For example, whereas *take* and *get* are first and second on the Biber, et al. list, *go* and *come* are the first two on Gardner and Davies' list (also my COCA list). The difference appears to have resulted

from the different definitions of PV used. As mentioned earlier, Biber, et al.'s definition involves a semantic criterion, which excludes verb+adverb combinations where verb and AVP hold separate instead of combined meanings. Thus Biber, et al. excluded many of the highly frequent PVs formed by *come* and *go* (e.g., *go back* and *come in*) listed in Gardner & Davies (2007).

4. I owe this idea to an anonymous reviewer, who suggested that the increased use of certain PVs over the past 20 years in COCA may explain their higher frequencies in COCA than in the BNC.
5. This rank difference number can be interpreted to mean, depending on one's perspective, either that the frequency of *pick up* in COCA is one rank higher (i.e., +1) than its frequency in the BNC, or its frequency in the BNC is one rank lower (21) than its frequency in COCA. To make the reporting of this rank order comparison simpler, no +/− sign is used.
6. DP_{norm}, instead of DP, is opted for because of its ability to show the maximal value.
7. All the examples here and in the following are from COCA.

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APPENDIX

Frequency and Distribution of the Most Frequent Phrasal Verbs in COCA and the BNC Listed according to Their Overall Rank Order in COCA (Frequency Number PMWs)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
go on[2]	**316.37**	198.70	96.71	101.65	52.55	153.48	1	148.33	1	0
pick up[2]	108.67	**262.17**	96.13	90.29	23.70	115.40	2	89.95	3	1
come back[2]	**251.75**	163.84	50.15	69.15	11.92	109.44	3	79.91	5	2
come up[2]	**250.51**	102.38	64.42	68.29	18.91	101.48	4	54.97	9	5
go back[2]	**190.98**	154.92	56.15	65.03	19.74	97.31	5	80.27	4	1
find out[2]	**162.08**	99.41	65.88	50.84	22.35	80.43	6	65.88	8	2
come out[2]	**163.22**	90.99	45.35	50.32	11.48	72.51	7	49.99	12	5
go out[2]	**129.91**	109.79	48.47	56.02	9.62	70.77	8	76.52	6	2
point out[1]	79.13	38.72	76.70	62.05	**90.72**	69.71	9	69.51	7	2
grow up[1**]	89.25	61.39	75.95	**97.38**	22.57	69.56	10	18.44	53	43
set up[1]	67.62	55.21	**83.50**	74.48	43.38	65.11	11	103.12	2	9
turn out[1]	**82.87**	64.50	81.89	58.65	33.39	64.58	12	42.64	21	9
get out[2]	**122.05**	107.17	41.84	44.29	6.92	64.43	13	35.28	30	17

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
come in[2]	**121.23**	99.71	39.30	46.52	10.11	63.36	14	47.91	14	0
take on[1]	71.67	46.99	**71.93**	70.52	48.51	62.17	15	41.79	22	7
give up[1]	65.31	**72.40**	51.38	67.90	23.76	56.11	16	41.66	23	7
make up[1]	54.35	**61.65**	59.20	56.85	46.91	55.80	17	54.43	10	7
end up[1**]	**82.44**	47.34	63.97	58.23	20.38	54.80	18	33.62	32	14
get back[2]	90.61	**92.45**	35.37	44.52	5.33	53.56	19	45.31	19	0
look up[3]	16.85	**202.87**	19.96	12.84	4.31	50.24	20	38.53	26	6
figure out[1**]	**70.46**	62.95	52.39	41.92	12.40	48.17	21	2.73	147	126
sit down[2]	55.75	**126.49**	27.65	23.23	6.34	47.43	22	44.57	20	2
get up[2]	51.79	**126.60**	31.22	24.56	5.09	47.41	23	39.18	25	2
take out[3]	57.45	**87.74**	35.15	33.83	8.28	44.32	24	34.10	31	7
come on[3]	83.67	**108.72**	12.84	10.60	1.86	43.22	25	48.07	13	12
go down[2]	**73.51**	64.34	26.47	27.41	6.43	39.62	26	47.59	15	11
show up[1**]	**52.11**	45.79	43.30	47.22	8.90	39.57	27	7.64	119	92
take off[2]	36.73	**81.66**	32.28	27.54	5.71	36.58	28	21.52	46	18
work out[1]	**49.63**	34.09	43.50	39.57	14.62	36.47	29	46.81	16	13
stand up[2*]	42.76	**91.32**	20.94	18.20	5.70	36.46	30	30.43	34	4
come down[2]	**60.32**	54.37	24.25	27.20	6.82	34.58	31	32.90	33	2

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
go ahead[3*]	**119.46**	26.34	9.69	9.20	2.66	33.80	32	17.47	56	24
go up[2]	**64.84**	35.39	26.80	32.91	5.55	33.23	33	36.61	29	4
look back[2]	33.96	**71.20**	19.91	17.99	7.99	29.97	34	22.40	42	8
wake up[2**]	34.03	**63.82**	26.42	20.42	3.66	29.54	35	16.07	62	27
carry out[2]	26.48	12.13	19.92	23.83	**62.25**	28.86	36	41.60	24	12
take over[1]	30.01	23.28	26.08	**45.57**	16.21	28.24	37	53.95	11	26
hold up[2]	22.52	**75.11**	20.08	17.33	7.26	28.16	38	16.16	61	23
pull out[2**]	22.82	**77.47**	18.45	16.57	3.37	27.42	39	13.99	73	34
turn a/round[2]	33.08	**64.10**	16.08	20.39	4.33	27.37	40	15.62	64	24
take up[1]	21.42	**40.36**	29.42	22.49	22.56	27.19	41	45.86	18	23
look down[3]	9.01	**97.09**	11.98	6.09	3.20	24.96	42	22.11	43	1
put up[1]	**35.49**	33.16	20.53	28.26	4.99	24.49	43	28.22	36	7
bring back[1]	34.78	**35.56**	20.63	21.21	9.59	24.34	44	21.90	44	0
bring up[2]	**44.72**	34.99	17.83	15.73	8.14	24.31	45	24.95	40	5
look out[3]	14.91	**75.72**	15.01	12.36	3.57	23.97	46	16.33	59	13
bring in[1]	**38.97**	21.18	18.24	25.76	11.71	23.23	47	24.93	41	6
open up[1**]	**32.25**	21.53	23.12	19.11	17.33	22.74	48	20.43	49	1
check out[1**]	25.73	28.62	**33.62**	19.74	3.36	22.35	49	5.73	128	79

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
move on[1]	**35.97**	25.05	18.78	18.92	6.89	21.18	50	14.12	72	22
put out[2]	**38.96**	27.87	16.22	17.91	4.20	21.07	51	16.52	58	7
look a/round[3]	12.78	**73.79**	9.31	7.57	2.17	20.75	52	14.67	68	16
catch up[1**]	21.96	**31.00**	20.22	20.45	8.45	20.39	53	16.05	63	10
go in[2]	**48.10**	31.12	7.86	12.42	2.34	20.37	54	19.65	51	3
break down[1]	19.91	13.98	**26.49**	17.27	17.55	19.15	55	21.89	45	10
get off[2]	25.67	**33.29**	15.46	17.58	2.47	18.85	56	10.81	90	34
keep up[1**]	17.43	**25.45**	21.99	21.72	7.63	18.85	56	13.38	78	22
put down[2]	17.14	**50.11**	13.55	10.55	3.35	18.75	58	28.60	35	23
reach out[2**]	13.77	**45.17**	14.24	13.73	7.72	18.74	59	9.45	104	45
go off[2]	28.05	**37.63**	12.46	12.12	3.19	18.62	60	20.94	47	13
cut off[1**]	20.49	**30.74**	16.89	14.50	7.65	18.01	61	13.74	74	13
turn back[3]	8.17	**64.53**	8.60	6.50	3.44	17.91	62	13.67	75	13
pull up[3**]	9.20	**57.83**	13.14	8.25	1.93	17.81	63	10.53	92	29
set out[1]	12.74	19.40	**23.68**	14.83	17.54	17.67	64	46.11	17	47
clean up[1**]	20.87	**22.09**	17.88	19.81	7.19	17.58	65	9.26	105	40
shut down[1**]	23.60	12.91	17.38	**24.46**	5.91	16.92	66	4.69	143	77
turn over[1]	20.25	**25.27**	13.53	18.20	5.43	16.50	67	9.70	102	35

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
slow down[1**]	17.34	**22.14**	21.05	13.98	6.71	16.29	68	11.91	85	17
wind up[1**]	19.97	15.72	19.80	**21.13**	3.10	16.02	69	8.26	111	42
turn up[1]	13.19	**26.28**	19.13	14.66	4.92	15.62	70	26.97	38	32
line up[1**]	14.22	**20.94**	17.82	20.40	4.17	15.51	71	9.96	98	27
take back[2]	23.83	**28.47**	10.59	10.44	4.24	15.47	72	16.20	60	12
lay out[1**]	**20.65**	18.59	16.95	11.49	8.44	15.27	73	2.64	148	75
go over[2]	26.11	**32.96**	7.87	7.49	2.22	15.25	74	9.86	101	27
hang up[3**]	8.36	**52.40**	9.27	6.45	0.92	15.23	75	5.40	133	58
go through[2]	**38.16**	12.35	9.20	13.43	2.51	15.22	76	9.66	103	27
hold on[2]	23.76	**28.98**	11.79	8.46	3.12	15.19	77	9.04	107	30
pay off[2**]	15.67	7.60	22.50	**24.60**	4.46	15.09	78	6.18	125	47
hold out[3]	6.84	**49.57**	8.24	7.60	4.34	15.06	79	15.00	67	12
break up[1]	16.87	17.91	**18.47**	14.76	6.31	14.91	80	12.80	81	1
bring out[1]	**22.53**	18.96	13.30	10.66	7.07	14.53	81	14.18	71	10
pull back[3**]	9.67	**45.94**	9.14	6.88	1.76	14.47	82	7.50	120	38
hang on[1**]	13.41	**30.90**	13.50	11.50	2.80	14.34	83	20.11	50	33
build up[1**]	17.01	8.76	**21.55**	12.16	10.99	14.21	84	37.34	28	56
throw out[2**]	**23.19**	18.55	10.33	15.20	3.36	14.13	85	4.91	140	55

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
hang out[1**]	15.55	**19.47**	17.07	15.67	2.60	14.10	86	2.74	146	60
put on[2]	18.04	**28.87**	11.93	8.69	3.12	14.08	87	14.21	68	19
get down[2]	22.23	**23.62**	10.31	9.59	1.96	13.53	88	15.31	65	23
come over[2]	16.40	**35.41**	8.57	5.99	1.35	13.43	89	9.99	99	10
move in[1]	13.07	**24.99**	11.48	14.94	2.98	13.43	89	7.86	116	27
start out[1**]	**20.52**	10.83	16.43	13.40	4.03	13.14	91	4.88	141	50
call out[3**]	5.28	**43.99**	7.48	6.04	3.53	13.03	92	3.79	144	52
sit up[3]	5.63	**50.71**	6.35	1.83	0.91	12.83	93	11.53	87	6
turn down[1]	13.69	17.09	12.99	**17.15**	2.63	12.71	94	10.46	94	0
back up[1**]	14.22	**18.54**	12.84	13.06	4.29	12.58	95	9.08	106	11
put back[2]	16.26	**25.91**	9.10	8.86	2.80	12.53	96	13.63	77	19
send out[1**]	**18.08**	14.56	12.43	12.08	4.69	12.40	97	13.67	76	21
get in[2]	19.92	**22.12**	8.60	9.66	1.65	12.36	98	11.22	88	10
blow up[1**]	**21.05**	14.46	10.49	11.84	2.55	12.11	99	7.79	117	18
carry on[1]	11.55	**17.41**	12.09	10.43	8.86	12.04	100	38.51	27	73
set off[1]	9.40	**18.54**	14.39	12.35	4.33	11.79	101	18.60	52	49
keep on[2**]	14.25	**20.01**	12.67	9.33	2.31	11.71	102	8.28	110	8
run out[2*]	14.26	**21.46**	9.21	10.97	2.17	11.57	103	11.89	86	17

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
make out[3]	6.93	**36.47**	7.67	4.34	2.14	11.35	104	11.00	89	15
shut up[3*]	8.88	**38.37**	5.00	3.89	1.16	11.27	105	14.19	70	35
turn off[2]	10.28	**20.22**	13.63	8.99	3.20	11.25	106	5.91	126	20
bring about[2]	10.72	2.80	8.67	6.51	**27.44**	11.22	107	20.73	48	59
step back[3**]	8.16	**32.32**	7.10	4.97	2.74	10.92	108	3.31	145	37
lay down[2**]	8.97	**24.68**	10.56	5.48	5.12	10.89	109	10.08	97	12
bring down[1]	**15.92**	15.46	9.52	9.21	4.19	10.86	110	10.17	95	15
stand out[1**]	7.79	12.47	**13.92**	10.72	9.32	10.85	111	8.14	113	2
come along[2]	15.01	**17.86**	9.26	9.51	1.81	10.68	112	12.64	82	30
play out[1**]	**15.95**	6.49	9.00	11.69	8.27	10.32	113	2.62	149	36
break out[1]	11.49	**12.23**	10.25	11.57	5.76	10.26	114	9.91	100	14
go a/round[2]	**18.56**	17.11	6.32	6.50	1.93	10.07	115	17.96	55	60
walk out[2**]	11.99	**24.84**	5.79	6.52	1.35	10.01	116	8.06	115	1
get through[2] -	**19.06**	11.66	8.11	7.55	1.92	9.70	117	5.31	134	17
hold back[2] -	8.65	**18.66**	7.72	7.47	3.58	9.16	118	8.19	112	6
write down[1**]	9.19	**16.77**	8.91	5.02	5.46	9.04	119	15.05	66	53
move back[1] -	7.66	**14.85**	7.93	9.76	3.14	8.63	120	5.63	131	11
fill out[1**] -	8.11	9.28	8.58	**10.86**	5.51	8.46	121	2.55	150	29

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
sit back[2] -	7.38	**23.69**	5.50	5.29	0.75	8.43	122	8.30	109	13
rule out[1**]	**11.86**	2.50	8.22	9.88	8.62	8.25	123	13.05	79	44
move up[1] -	8.23	**10.44**	8.68	10.42	3.26	8.21	124	4.75	142	18
pick out[2] -	7.76	**16.31**	8.90	5.63	2.44	8.19	125	8.52	108	17
take down[2]-	10.78	**16.95**	6.01	5.57	1.82	8.19	126	7.71	118	8
get on[2]	13.91	**14.76**	5.18	5.50	1.58	8.17	127	26.83	39	88
give back[1] -	**11.88**	10.71	6.38	7.94	2.93	7.97	128	5.05	138	10
hand over[2**]	7.64	**17.25**	5.95	6.26	3.01	7.96	129	17.35	57	72
sum up[1**]	6.17	2.96	**11.63**	8.24	9.62	7.77	130	12.28	84	46
move out[2] -	10.10	**13.22**	5.99	7.42	2.22	7.76	131	5.70	129	2
come off[1] -	8.83	8.27	7.90	**12.66**	0.67	7.67	132	5.13	136	4
pass on[1**]	8.26	**8.80**	8.50	6.56	4.88	7.42	133	12.81	80	53
take in[2] -	6.39	**15.16**	6.26	5.03	2.74	7.07	134	5.07	137	3
set down[3] -	1.89	**27.64**	2.95	1.43	1.59	6.95	135	5.02	139	4
sort out[1**]	**9.00**	7.73	6.91	5.50	4.93	6.82	136	27.36	37	99
follow up[2**]	**13.40**	4.55	3.16	5.45	7.03	6.73	137	10.12	96	41
come through[1] -	**10.82**	8.64	5.43	6.84	1.54	6.66	138	5.64	129	9
settle down[2**]	4.17	**15.63**	6.46	4.91	1.75	6.53	139	10.76	91	48

(continued)

PVs	Distribution across the Registers in COCA					In COCA		In BNC		Rank Order Difference
	Spoken	Fiction	Magazine	Newspaper	Academic	Total	Rank Order	Total	Rank Order	
come a/round[2]	8.25	**14.05**	4.50	4.93	0.97	6.50	140	12.42	83	57
fill in[1**]	5.65	**7.92**	6.35	6.34	3.74	5.99	141	18.18	54	87
give out[1] -	**8.42**	7.77	4.80	5.31	1.77	5.62	142	5.30	135	7
give in[2] -	4.80	**10.95**	6.11	3.88	2.24	5.58	143	5.76	127	16
go along[2] -	**9.63**	6.37	4.29	4.49	1.56	5.28	144	7.14	123	21
break off[2] -	2.96	**11.93**	4.56	2.70	1.93	4.77	145	5.46	132	13
put off[1] -	4.80	**6.61**	5.31	5.20	1.44	4.67	146	7.39	121	25
come about[1] -	**7.82**	2.52	4.09	3.31	5.28	4.63	147	7.38	122	25
close down[1**]	**7.60**	3.58	3.33	3.88	2.17	4.13	148	10.48	93	55
put in[2] -	5.09	**7.22**	3.16	3.54	1.05	4.00	149	8.06	114	35
set about[1] -	1.00	**3.22**	3.20	2.07	2.13	2.32	150	6.42	124	26

Notes: 1. The number (1, 2, or 3) after each PV indicates its distribution pattern across the registers with 1 meaning fairly evenly distributed, 2 not evenly distributed, and 3 very unevenly distributed. 2. The bold number in each PV entry is the highest among the five registers. 3. The * sign after a PV indicates it is one of the 4 PVs from Biber, et al.'s list that is not on Gardner and Davies's top 100 PV list. 4. The ** sign indicates it is one of the 33 PVs this study has identified. 5. The - sign after a PV indicates its number of tokens PMWs is below 10 in either corpus.

Chapter 18

A Corpus Study of the Most Common Multi-Word Units and Sentence Stems in Academic English

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INTRODUCTION

Multi-word constructions (MWCs, often also referred to as *multi-word expressions/phrases/units*) cover a variety of fixed or semi-fixed expressions, such as idioms, collocations, formulae, chunks, and lexical bundles.[1] Research has shown that these linguistic structures are very important in language use and learning (Biber & Conrad, 1999; Biber, Conrad, & Cortes, 2004; Meunier & Granger, 2008; Schmitt, 2004; Simpson-Vlach & Ellis, 2010; Sinclair, 1987; Wray, 2008). In fact, familiarity with them is often a good barometer of language proficiency (Howarth, 1998). These linguistic structures present serious challenges for L2 learners because they are often language specific and enormous in number. Due to their large number, it will be very helpful for language learning/teaching to identify those most frequently-used MWCs in various registers. There have been some corpus studies on the most frequently-used MWCs of different types in and/or across various specific registers (Biber & Conrad, 1999; Biber, et al., 2004; Biber, Johansson, Leech, Conrad, & Finegan, 1999; Cortes, 2004; Gardner & Davies, 2007; Hyland, 2008; Liu, 2003, 2008, 2011; Simpson-Vlach & Ellis, 2010). A few are of particular interest as they deal with those MWCs known as *formulas*, *lexical bundles*, or *word clusters* in general academic writing (Biber & Conrad, 1999; Biber, et al., 1999; Byrd & Coxhead, 2010; Carter & McCarthy, 2006; Simpson-Vlach & Ellis, 2010) or in specific disciplines such as history and biology (Cortes, 2004; Hyland, 2008). These studies have significantly enhanced our understanding of MWCs in academic writing, but they have some limitations.

First, the corpora used in these studies on MWCs in academic writing were relatively small in size, each having five million words or fewer. Second,

many of the MWCs reported in these studies are incomplete structures with low functionality, an issue Simpson-Vlach & Ellis (2010) addressed, though not quite adequately, as will be shown in the next section. To build on the existing research and simultaneously address the limitations, the present study aims to examine the most frequent MWCs in academic writing by using the academic writing sub-corpora of the 400 million-word Corpus of Contemporary American English and the 100 million-word British National Corpus. The inclusion of both American and British English corpora will allow the study to compare the use of written academic MWCs between two major varieties of English. The choice to examine MWCs in academic writing in general rather than in one discipline is motivated by the belief that such a study will benefit more academic ESL learners because they usually must learn general academic written English before studying more specialized academic English. Furthermore, the academic written data in the two corpora come from over 150 different academic journals across many different disciplines; hence, the results of the study should be valuable to a wide range of ESL writers.

EXISTING CORPUS RESEARCH ON MWCS: FOUNDATIONS FOR THE PRESENT STUDY

Moon (1998) appears to be one of the first major corpus studies of MWCs. Yet, as a study of MWCs in general (using the 18-million-word Oxford Hector Project corpus with several registers such as fiction, magazines/periodicals, and speech), it did not examine MWCs in academic writing specifically, although it offered cross-register comparisons of MWCs. Also worth noting from the study is its broad inclusion of MWCs, covering all types and lengths of MWCs, ranging from short idioms to long formulas/proverbs. Moon's corpus query of MWCs was not done by automatic retrieving but by following, as a guide, a "database" or list of MWCs generated from dictionaries and other reference materials, a functional query method that may be used when no automatic retrieving is available or possible, which, as will be shown below, is the case in this study. It is worth noticing that Moon excluded from the database those items considered "insufficiently fixed or non-compositional," a key definition of MWC in her study (Moon, 1998, p.45). A compositional expression is one whose meaning is derived from the meanings of its individual words while a non-compositional structure is one whose

meaning is idiomatic, that is non-compositional. Moon's inclusion of only fixed/non-compositional expressions excluded many of those highly frequent MWCs known as lexical bundles (LBs), an important type of MWCs first identified by Biber and colleagues (Biber & Conrad, 1999; Biber, et al., 1999). Other terms have been used in referring to this type of MWCs, such as "formulas" (Simpson-Vlach & Ellis, 2010) and "word clusters" (Carter & McCarthy, 2006). However, to avoid redundancy and confusion, only the term "lexical bundle" will be used in the remainder of the paper for these MWCs.

Broad in scope, LBs are strings of words "that show a statistical tendency to co-occur" (Biber & Conrad, 1999, p.183). As such, they "are recurrent expressions, regardless of their idiomaticity, and regardless of their structural status" (Biber, et al., 1999, p.990) and are identified automatically based on frequency with the use of a computer program. The minimum frequency adopted for LB identification has varied from 10 to 40 per million words (PMWs), for example, Biber, et al. (1999) and Simpson-Vlach & Ellis (2010) used 10 PMWs; Biber & Conrad (1999) and Hyland (2008) opted for 20 PMWs while Biber, et al. (2004) adopted 40 PMWs. However, one study (Carter & McCarthy, 2006), which presented only the top 20 most frequent two-/three-/four-word LBs, used a lower cutoff frequency in counting the total number of the LBs of each length type identified; for LBs of six words in length, it included all that occurred "20 or more times in a spoken and written corpus of five million words each" (p.831; 20 occurrences in five million words would convert to only 4 PMWs). To ensure the representativeness of the LBs identified, the range distribution of an LB (i.e., in how many different texts and/or academic disciplines and divisions it occurs) is also often considered. For example, in Biber, et al. (1999), LBs each had to appear 10 tokens or more PMWs "in at least six different texts" (p.1136) while Simpson-Vlach & Ellis (2010) required their written LBs to occur at least 10 tokens PMWs "in three out of four academic divisions [humanities/arts, social sciences, natural sciences/medicine, and technology/engineering]" (p.493).

Employing the empirical query method they developed, Biber and colleagues identified many MWCs of various lengths (4–6 words with those of 4 words being the main type) and produced a series of lists of the most frequent LBs in various registers, including academic writing (Biber & Conrad, 1999; Biber, et al., 1999, 2004). By nature, most of the LBs are "semantically transparent and formally regular" and they provide the basic

"building blocks for coherent discourse" (Hyland, 2008, p.6). Furthermore, Biber, Conrad, & Cortes (2003, 2004) successfully classified LBs into three major functional categories (with various subcategories) based on the role(s) they play in discourse: (1) stance expressions (e.g., *it's important to*), (2) discourse organizers (e.g., *on the other hand*), and (3) referential expressions (e.g., *at the end of*). This classification helped establish a framework for the functional categorization of LBs, allowing us to better understand the use of these types of MWCs.

Biber and colleagues' pioneering work laid the foundation for the research on LBs and led to many more fruitful studies by others on the topic. For example, Cortes (2004) examined LBs in two specific disciplines, history and biology, and found that LBs were often discipline-specific and that many longer (4/5-word) LBs contain in them shorter (3-word) LBs. These findings were later supported by Hyland (2008) in a corpus study that compared the use of written academic LBs in four different disciplines: applied linguistics, biology, business, and electrical engineering. Hyland's work is especially important as it shows, with many examples, how and to what extent LBs vary from discipline to discipline. Another very important publication that deserves special attention is Simpson-Vlach & Ellis's (2010) recent study of the most common LBs in academic speech and writing. The major contribution of this study is its enhancement of the method for identifying LBs.

Before this study, the most widely used approach was the one developed by Biber and colleagues which relied solely on frequency. According to Simpson-Vlach & Ellis (2010), Biber and colleagues' approach:

> ... has the advantage of being methodologically straightforward, but results in long lists of recurrent word sequences that collapse distinctions that intuition would deem relevant. For example, few would argue with the intuitive claim that sequences such as "on the other hand" and "at the same time" are more psycholinguistically salient than sequences such as "to do with the," or "I think it was," even though their frequency profiles may put them on equivalent lists. (p.490)

A main reason for the low psychological salience of LBs like *to do with the* and *I think it was* appears to be that they are structurally/semantically incomplete. It is important to note most of the lexical bundles identified by frequency alone are structurally/semantically incomplete, a fact fully acknowledged by Biber and colleagues and other scholars working on LBs

(e.g., Carter & McCarthy, 2006, p.828). In fact, according to Biber and his associates, of all the LBs they identified, only 15% in conversation and 5% in academic writing are complete structures (Biber & Conrad, 1999). The structurally/semantically incomplete lexical bundles are fine results produced by an objective, data-driven method, but, as Simpson-Vlach & Ellis (2010) note, they are not psycholinguistically salient and "seem neither terribly functional nor pedagogically compelling"(p.493).

To address the problem, Simpson-Vlach & Ellis (2010) developed an empirically-derived "measure of utility, called 'formula teaching worth' (FTW)" for identifying useful LBs (p.488; note "formula" is Simpson-Vlach & Ellis's term for an LB). In developing this instrument, they first used two measures, frequency and a Mutual Information (MI) score, to identify common LBs of 3–5 words in length. MI is a statistical procedure commonly used to determine the likelihood that the words in a phrase co-occur more than by chance, with a high MI score indicating a strong co-occurrence tendency (i.e., not by chance) and a low score suggesting a co-occurrence likely by chance.[2] A comparison of the results of the two measures reveals that the frequency measure tends to privilege those highly frequent but less functional LBs, for example, "*and this is* and *this is the*" while the MI favors more functional and structurally complete LBs, for example, "*does that make sense*" and "*due to the fact that*" (Simpson-Vlach & Ellis, 2010, pp.493–494). In order to further check the appropriateness of the two measures, Simpson-Vlach and Ellis had twenty experienced ESL instructors/testers rate, on a scale of 1–5, 108 of the LBs they identified regarding (1) whether each of the LBs was a "formulaic expression/ fixed phrase," (2) whether it "has a cohesive meaning or function, as a phrase," and (3) whether it was worth teaching. The ratings on the three issues were significantly correlated, forming a reliable measure of experts' insights about an LB's teaching worthiness. Simpson-Vlach and Ellis then correlated the frequency results and the MI score results each with the instructors' teaching worthiness ratings to see which of the former two measures better predicted the latter. The MI turned out to be a much better predictor, although frequency also significantly correlated with the instructors' judgment. Then, they carried out a multi-regression analysis of the two corpus measures for predicting the instructors' judgment of an LB's teaching worthiness, resulting in a standardized measurement of the usefulness of an LB "whereby teaching worthiness [i.e., FTW]=b 0.56 MI+b 0.31 frequency" (p.496).

Applying this empirically-derived measurement to all the LBs identified earlier by the frequency and MI measures, Simpson-Vlach and Ellis compiled three lists of the most common LBs, a list of core LBs (207 items), a list of the top 200 LBs in spoken academic English, and a list of the top 200 LBs in written academic English. An examination of the lists indicates, however, that while many of the LBs are structurally-complete, there are still some incomplete ones, for example, "form of the," "this is the," and "and this is," the latter being the very examples of LBs that Simpson-Vlach and Ellis cited earlier in the paper as being "neither terribly functional nor pedagogically compelling" (2010, p.493). To help determine whether this new measurement by Simpson-Vlach and Ellis indeed better screens the structurally-incomplete and less functional LBs than the frequency-only method, I compared the number and percentage of the incomplete LBs ending in "a/the" in the Simpson-Vlach and Ellis's written academic LB list with that in the counterpart lists of Biber, et al. (1999) and Carter & McCarthy (2006). The reason for focusing on this specific type of incomplete LB is that their structural/semantic incompleteness is arguably most obvious while the incompleteness of some of the others (e.g., those ending with a preposition) is much less so. The article "a/the" does not have any conceptual independence or independent meaning, an important concept in the study of construction in cognitive linguistics, for "If we say 'the' we expect another meaning to follow" (Holme, 2009, p.206). In contrast with "a/the"-ending LBs, those ending with a preposition, infinitive, or the clause conjunction "that" (e.g., "in terms of" and "in order to/that") may be considered complete structures as evidenced by the fact that many dictionaries such as the *Oxford English Dictionary* (*Oxford English Dictionary* online, 2011) list them as independent meaningful phrases in the definitions of the key words in the phrases, for example, "in order to" listed under the noun "order."

The results of the comparison show Simpson-Vlach and Ellis's new method has indeed substantially reduced the number/percentage of "a/the" -ending LBs. While 37% (131/353) of Biber, et al.'s and 57.5% (46/80) of Carter and McCarthy's written academic LBs are this type, only 18% (36/200) of Simpson-Vlach and Ellis' written academic LBs are. However, despite the substantial reduction of the number/percentage of incomplete LBs, the fact remains that the new method does not completely screen out such LBs. Thus, there appears to be a need to develop an even more effective approach for identifying useful LBs. Yet before such an approach is available, it seems a change in the way the incomplete LBs are represented can enhance their structural completeness and functionality.

This is because a close look at the structurally incomplete LBs will show that they are not really incomplete in nature. For example, if we change *this is the* to *this is det* (*determiner*)+*NP* (*noun phrase*), the LB is structurally complete because det+NP is a schematic linguistic representation standing for any complete noun phrase with an article "the" or "a" (e.g., "This is *the book he wrote*"). This type of abstract representation of language structure is used commonly in linguistic description, especially in Chomskian generative linguistics where language is viewed as a system consisting of a series of necessary and optional grammatical structures, for example, *S*>*NP VP*, *NP*>(*de- t*) (*adj*) *N*, etc.

Such a representation of MWCs also works well with both traditional and contemporary language acquisition theories. Traditionally, language learning is considered to involve "both item learning and system learning" (Ellis, 1997, p.13). In item learning, learners learn an expression such as *How are you?* "as an unanalysed whole" while in system learning, learners figure out the rules for forming correct expressions, for example, a transitive verb (VT) needs a NP as a complement/object (Ellis, 1997, p.13). In contemporary cognitive linguistic theory, language acquisition is usage-based construction learning, involving the learning of filled constructions as well as the more abstract partially-filled and unfilled constructions as schemas (Ellis, 2008; Holme, 2009). A filled construction is one with all the lexical elements filled and strictly fixed, such as pure idioms (e.g., *jump the gun* and *What's up?*), a partially-filled construction is one with only some of the lexical elements filled (e.g., *make someone do something/consider something+adjectival complement*), and an unfilled construction is an abstract schema (e.g., the ditransitive "transfer of object" schema: *V+NP+NP*). It is important to note here that unfilled or partially-filled constructions are not fragmented. Instead, they are complete as a syntactic structure, only with one or more lexical elements unfilled, for example, *put something somewhere* or *V+NP+ADV* is a complete representation of a structure even though it is not completely lexically filled. In short, presenting structurally-incomplete LBs as partially-filled constructions enables us to represent them as complete constructions. Also, partially-fill schematic constructions are more productive than the structurally-incomplete ones, for example, *a part of NP* is more productive than *a part of the*.

To sum up, significant progress has been made in corpus-based research on MWCs. Yet, as noted earlier, the existing studies on written academic MWCs have so far been limited to relatively small corpora; as

such, their findings may lack reliability. To help address this issue, this study aims to examine MWCs in general written academic English using two mega corpora. It strives to answer the following main questions: (1) which MWCs are most common and what main functions they play, (2) to what extent the previous research findings about the usage patterns of MWCs in general academic English can be attested in large corpora, and (3) whether there is any difference in the use of MWCs between American and British academic English.

METHODOLOGY

Corpora Used

The corpora used in this study were the academic writing subcorpora in COCA and BNC through the free online interfaces provided by Professor Mark Davies (2004, 2008) of Brigham Young University. Table 1 provides the basic information of the two corpora. These two academic corpora were chosen because of their representativeness (both in size and the variety of academic disciplines covered) and contemporariness. The journal articles and books in them are what ESL/EFL learners of academic writing will actually be reading in their present and future study. To my knowledge, the two corpora are the largest that have been used in the study of MWCs in academic writing.

Table 1: Corpora used

	Academic Subcorpus of COCA			**Academic Subcorpus of BNC**		
Total # of words (million)	82.91			15.3		
Type of data	100% journal articles (from 148 journals)			70% book chapters; 30% journal articles		
Time period covered	1990–2010			1980–1993		
	Academic division	# of words (million)	# of texts	Academic division	# of words (million)	# of texts
	Education	7.99	2,102	Engineering	0.68	23
	History	11.51	2,300	Humanities/ Arts	3.29	83

(continued)

Academic Subcorpus of COCA			Academic Subcorpus of BNC		
Academic division	# of words (million)	# of texts	Academic division	# of words (million)	# of texts
Humanities/ Arts	10.9	2,345	Law/ Education	4.62	161
Geography/ Social Science	15.03	3,462	Medicine	1.41	38
Law/Political Science	8.31	1,611	Natural Sciences	1.11	48
Medicine	5.63	1,998	Social Science	4.22	116
Philosophy/ Religion	6.51	1,350			
Science/Engineering/Tech*	13.12	4,012			

* It also contains a very small "miscellaneous" section, which has 3.91 million words.

Scope of MWCs Queried and Procedures Used for Corpus Query

This study aimed to find the most common MWCs of a broad variety, including LBs, idioms, and phrasal/prepositional verbs. The latter two types are included because they are fixed/semi fixed in structure and mostly idiomatic in meaning. As such, they are, like the other MWCs, difficult for L2 learners to acquire (Gardner & Davies, 2007; Meunier & Granger, 2008). Also, even though these types of MWCs are used primarily in fiction and speaking, a few (e.g., phrasal verbs like *point out*) have been found to be used frequently in academic writing (Biber, et al., 1999).

Because the two corpora can only be searched through their supplied search engines (i.e., there is no download or other means of accessing their entire data), the query for MWCs was done using the supplied search functions, which do not include automatic extracting of MWCs. Therefore, I adopted an approach similar to Moon's (1998): using published sources as a database/guide for what MWCs to query. The database included (1) the lists of LBs in written academic English found in Biber, et al. (1999), Carter & McCarthy (2006), and Simpson-Vlach & Ellis (2010), which were selected because they are all of general academic MWCs, not discipline

specific ones like those in Cortes (2004) and Hyland (2008); (2) the lists of idioms and phrasal verbs (including phrasal-prepositional verbs) in Biber, et al. (1999), Gardner & Davies (2007), Liu (2003, 2008, 2011); and (3) the *Cambridge International Dictionary of Idioms* (1998), the *Cambridge International Dictionary of Phrasal Verbs* (2001), the *Oxford Idioms Dictionary* (2001), and the *Oxford Phrasal Verbs Dictionary* (2001). Specifically, all the written lexical bundles on Biber, et al.'s, Carter and McCarthy's, and Simpson-Vlach and Ellis's lists (except the two-word items on the latter's list and those that overlapped) were searched (559 in total). Carter and McCarthy's two-word LBs (e.g., *of the/in the*) were not included because of their lack of meaning/functionality. Yet filled meaningful two-word constructions, such as *for example/of course* were queried, all from the aforementioned idiom sources.

The queried idioms (e.g., *give rise to/take place*) and phrasal/prepositional verbs (e.g., *make up/deal with*) included all of those on the lists of Biber, et al. (1999) and Gardner & Davies (2007), as well as many selected based on intuition from the dictionaries, resulting in a total of 1,872 idioms and 2,207 phrasal/prepositional verbs. The justification for not querying all the idioms and phrasal verbs was that, as mentioned earlier, most of them are rarely used in academic writing (Biber, et al., 1999; Moon, 1998). The reason for using intuition in selecting search items was that, although intuition may not be highly reliable, it is often used by linguists for data selection and is considered a "legitimate basis of sound research" (Wray, 2008, pp.107–108). This is especially so when the selected items are tested by corpus data. Besides the above-mentioned types, I also queried 48 NP+verb+that (e.g., *NP indicate/assume that*) and 117 special verb+prepositional constructions (e.g., *associate with/derive from/focus on*), using the 284 verbs in the Academic Word List (AWL, Coxhead, 2000) as a guide. The 48 NP+verb+that construction items involved all of the verbs in the AWL that can take the *that* noun clause (e.g., *indicate/assume/conclude/imply that*). In total, 165 (48+117) out of the 284 AWL verbs were queried. The reason for querying these constructions was twofold: (1) some were already in the existing LB lists (e.g., *studies have shown that*, Biber, et al., 1999, p.1021) and (2) they are important in academic writing (Charles, 2006; Francis, Hunston, & Manning, 1996). In all, a grand total of 4,803 MWCs were queried.

Regarding the corpus query procedure, it was fairly straightforward thanks to the various useful querying and sorting functions provided by the corpora, for example, the parts of speech query and the "lemma" sorting function (the latter being very helpful for returning search results

of verb constructions in sum numbers instead of breakdown numbers of the different forms of the verb, for example, *take/takes/took/taking advantage of*). However, due to the number of items queried and the fact that two corpora were examined, the search was still labor-intensive.

Selection and Representation of the Most Frequently-Used MWCs

Both frequency and range distribution were considered in the selection of the most common MWCs. Concerning frequency, this study adopted 20 tokens PMWs, the middle of the cutoff values that have been used (i.e., 10, 20, and 40 PMWs) in LB research as already discussed earlier. Specifically, if an MWC showed a frequency of 20 PMWs in either the BNC or the COCA academic writing sub-corpus, it was included. Regarding range distribution, this study followed Simpson-Vlach & Ellis's (2010) basic principle: an MWC must have 20 tokens PMWs in six out of the eight academic divisions in COCA or five out of six academic divisions in BNC; also, because only two out of the eight academic divisions in COCA are related to natural science and engineering, an item must have 20 PMWs in one of them in order to be included. If not, it was excluded even if it has 20 PMWs in six out of eight academic divisions.

Regarding the way the selected MWCs are represented, all those that end with *a/the* or any other incomplete NP (e.g., *one of the)* are represented in the form ending with "*det+NP*" (e.g., *one of det+N*). It is necessary to note that many MWCs with such an ending are listed with the "det/N" placed in parentheses, for example, "in terms of (*det+N*)." This notation contrasts with that of those MWCs that end directly with a preposition, for example, "a number of" and "a variety of." The latter MWCs are so presented because they are used typically with an NP not preceded by *det+N* (e.g., *a number/variety of books/people*) and their frequency with an NP preceded by *det+N* is fewer than 20 PMWs. In contrast, those MWCs ending with (*det+N*) all have a 20 PMWs frequency of such use. For example, *in terms of* (det+N) is so presented because while *in terms of* has a frequency of 150.87 PMWs in COCA's academic sub-corpus, 27.1 of the 150.87 are *in terms of the*, that is, *in terms of* det+N has over 20 tokens PMWs. Due to the dual function of *to* as a preposition and a sign of infinitive, in the case of MWCs that end with *to*, I have specified the infinitive *to* by placing a VP after it, for example, *in order to VP*.

Some of the constructions each include several related forms in

them (e.g., *the/this type of*) where each form may be considered a different MWC. The related forms are combined for two reasons. First, in many cases, the different forms are, in essence, of the same construction, for example, *the effect of/the effects of*. Second, even if the related forms are not exactly of the same MWC, placing them together helps highlight their semantic/structural similarities/differences and saves space, reducing the total number of MWCs on the list. It is important to note that in the constructions with combined forms, a special notation system is used. Each element in the parentheses of a MWC is listed to mean that the element together with the remaining structures in the construction has a frequency of more than 20 PMWs. So the example of *(by) the fact that* means *by the fact that* has more than 20 PMWs although *the fact that* has even more. There are some other prepositions also used in this construction (e.g., *despite/from/to/on the fact that*) but they are not included in the parentheses because none has the minimum 20 PMWS frequency. Finally, it is necessary to note that a noun construction on the list that is not preceded by any preposition in parentheses does not mean that it is not used in any prepositional phrase; it only means that it is not used in any prepositional phrase twenty times or more PMWs. Reporting the MWCs using the aforementioned combination methods allowed me to reduce the total number of items on the list while still showing the different forms of the MWCs.

RESULTS AND DISCUSSION

The Most Frequently-Used Filled/Partially-Filled Constructions

With 20 PMWs as the cutoff frequency and the range selection criterion mentioned earlier, the study yielded a list of 228 most frequently-used academic written English MWCs (reported in Appendix I) in the two corpora used for the study. It is important to note that with the 20 PMWs as the sole criterion, 290 MWCs should actually make the list but 62 were excluded because they did not meet the range distribution requirements. Of the 62 excluded MWCs, 52 did not have the required frequency in natural sciences/engineering/medicine (e.g., *bring about/in a way/in the sense (of)/the notion of*) and 10 did not show the required frequency in humanities/law/social sciences (e.g., *(be) composed of/shown in figure/the formation of*). It is interesting to note that 16 of the MWCs that did not have the required frequency in natural sciences/engineering

are hedges or framing expressions like those just mentioned. It suggests that hedging is perhaps not as common in these academic divisions as in humanities/social sciences, although, as Cortes (2004) notes, some other linguistic devices, like single words, may be used to hedge in these divisions. It is also necessary to note that the total number of the most common MWCs would be much higher if those related MWCs were not presented together, for example, *a/the number of, in addition (to)*. Such combined MWCs are presented as separate items in the existing studies, for example, the two items in the pairs *the case of the/the case of a* and *the presence of the/in the presence of* are each presented as two separate items in Biber, et al. (1999, pp.1015–1017), and *the other hand/on the other hand* are listed separately in Simpson-Vlach & Ellis's appendix list (2010). To make the list of the identified constructions more user-friendly, I have grouped them in two different ways: by frequency, and by semantic function. In terms of frequency, the constructions are grouped into three bands (see Appendix I): Band 1 containing those with 100 or more PMWs (77 total); Band 2 including those with between 50 and 99 PMWs (85 total); and Band 3 covering those with between 20 and 49 PMWs (67 total). The top 10 MWCs on the list are extremely frequent, all with a frequency over 300 PMWs. Of the three bands, Band 3 is the smallest because many of those MWCs which failed the range distribution best were from this group. This is because it is much more likely for MWCs with an over-all lower frequency to fail the academic division range test than those with a much higher frequency.

The semantic/functional categorization was much more complex because (1) it involves subjectivity and hence the classifications of some of the individual MWCs are often open to debate and (2) MWC often may perform more than one function. The categorization was based on the system developed by Biber, et al. (2003, 2004). This system divides MWCs into three major categories: referential, stance, and discourse-organizing constructions with each category containing some subcategories (see Table 2 for sample items in each category; the complete list is provided in Appendix II).

Affirmation of Previous Research Findings

This study has yielded results that affirm previous research findings. Here are a few examples. First, noun and prepositional constructions (e.g., *a/the number of* and *in terms of*) constitute the two largest types of

Table 2: Sample of the most frequently-used MWCs by function

Major Category	Subcategory	Example
Referential/Ideational*	Framing/Intangible framing attributes	*according to (det+N), in terms of (det+N)*
	Tangible framing attributes	*(in) the form of (det/N), in the size of*
	Identification/Identity specification	*there be det+NP (e.g., a number of), refer/(be) referred to (as) (det+N)*
	Qualifying	*as a whole, in general*
	Quantity specification	*(a) part of (det+N), a number of*
	Referential place/text/direction	*in+the name of a country/state/region (e.g., the US), see table X (at/by)*
	Referential time/sequence	*the end of (det/N), (at) the time of (det/N)*
	Reporting/description/interpretation	*NP suggest that, NP show that*
	Multifunctional	*the use of (det/N), (be) associated with*
Stance/Interpersonal* Expressions	Epistemic stance	*NP (I/We) argue that, NP believe that*
	Attitudinal/modality stance	*be able to, it is necessary to*
Discourse/Textual* Organizers	Linking	*as a result of, in contrast*
	Topic introduction	*let us/me+infinitive, with respect to*

* The terms "ideational/interpersonal/textual" are Halliday's (1994, p.178); I have added them because (1) as Cortes (2004) has noted, they correspond closely with Biber's terms for the three major categories and (2) they are more widely known in the linguistic field.

MWCs in academic written English identified in this study, as is the case in Biber, et al. (1999). Also, like Moon (1998) and Biber, et al. (1999), this study also finds that filled constructions, like idioms, are in general rarely used in academic writing. Furthermore, although phrasal verbs are generally not used in academic writing (Biber, et al., 1999; Liu, 2011), quite a few (11) actually made the most frequent MWC list with six in Band 1 and Band 2 (e.g., *point out*, *go on*, *carry out*, and *make up*). More importantly, as shown by a cross-register comparison query, *point out*, *carry out*, and *bring about* are actually used more often in academic writing than in any of the other four registers in the corpora including fiction and speaking, the two registers in which phrasal verbs are most common (Liu, 2011). Finally, as just mentioned, the range test prevented some frequent MWCs from making the list of the most common MWCs in this study because they lacked a high enough frequency either in the humanities/social sciences divisions or the natural sciences/engineering divisions. This result confirms earlier findings that MWCs are discipline-specific (Cortes, 2004; Hyland, 2008).

New Findings

This study has also produced many new findings. The first relates to the very high frequency of the "*NP+linguistic action verb (e.g., suggest)+that*" construction in academic writing, with six of the verbs in this construction (*suggest/show/argue/indicate/believe/claim)* making the Band 1 list. In fact, the first three are among the top 20. Clearly, being so highly frequent, these items should be high on the list of the MWCs for ESL/EFL writers to acquire. This result also appears to bring a new perspective on Biber, et al.'s (1999, pp.1019–1021) findings regarding the passive use of the construction in examples like "*it has been shown that/it has been suggested that*." In their study, these passive forms of the construction all showed more than 10 tokens PMWs with *it has been suggested* having more than 20 tokens. In my study, such passive uses of the construction exhibited a much lower frequency. There were only 3.56 and 11.27 PMWs of *been suggested that*, and 1.44 and 7.31 PMWs of *been shown that* in COCA and BNC respectively, frequencies that are truly minuscule when compared with the 300+occurrences PMWs of the active *NP suggest(s)* and 200+PMWs of *NP show(s) that* in the two corpora. These findings clearly indicate the need to include the active form of the construction in ESL writing instruction. Without this new

information, ESL students might mistakenly believe that the passive form of the construction should be learned first.

Another new finding is that a notable number of items on the existing lists of the most common MWCs in general academic writing not only did not make my list but also showed a very low frequency, for example, *the base of the/part/parts of the body/the temperature of/the/the division of labour* from Biber, et al. (1999), *the side of the/the edge of the* from Carter & McCarthy (2006), and *a and b/b and c/two types of* from Simpson-Vlach & Ellis (2010). The MWC *the base of the*, which recorded 20 PMWs in Biber, et al., occurred just 3.68 and 6.78 PMWs in the COCA and BNC academic sub-corpora respectively. Similarly, *part of the body* also registered merely 0.7 and 1.37 PMWs in the two sub-corpora respectively. The range query of the COCA showed that most of the very small number of the tokens of *the base of the* occurred in medicine and natural sciences/engineering. An examination of the tokens further confirms the finding. For example, of the 30 tokens of *the base of* in the 2009 COCA written academic data, 26 were from natural science/engineering and medical journals such as *Archaeology*, *Bioscience*, *Ear, Nose, and Throat Journal* and *Mechanical Engineering* (e.g., "At *the base of* a mud-brick pyramid," "added to *the base of* each blade," and "*the base of* the uvula.") Similarly, in the case of *part/parts of the body*, most of their few tokens in COCA showed in medicine. Similarly, *a and b/two types of* each showed over 40 and 20 PMWs respectively in Simpson-Vlach and Ellis's academic corpus, but they registered only 4.9 and 1.42 PMWs in COCA and 17.74 and 11.87 PMWs in BNC; also the two items occurred primarily in natural sciences/engineering.

This disparity in the findings of the frequency of these fairly specialized MWCs between my study and the other three studies appears to suggest the importance and need of using mega corpora and checking division range distribution in the study of MWCs in general academic writing. As mentioned earlier, all the other three studies each used a corpus of five million words or fewer. It is much more likely for a small corpus than a mega one to have overly-represented topics and disciplines in its data, especially if the former is only one sixteenth of the latter in size, as in the case of the corpus of the existing three studies vs. COCA's academic sub-corpus. The importance of checking range distribution is perhaps best shown in the examples of *the base of the/part/parts of the body* in Biber, et al. If we recall, the range distribution Biber, et al. (1999) used was an item had

to occur 10 times PMWs "in at least six different texts" (p.1136). They did not check the academic discipline or division range distribution. As I have shown, an academic range distribution check would have excluded the two Biber, et al. MWCs in question. The fact that Simpson-Vlach and Ellis's list does not include such discipline-specific items is likely due to their use of an academic division measure in their item selection.

There are four additional new findings worth mentioning. First, a few verb phrases for expressing the behavioral patterns of natural/social phenomena and events are very common in academic writing, such as *tend to* (214.59 and 166.04 PMWs in BNC/COCA respectively) and *take place* (154.91 and 92.59 PMWs in BNC/COCA). Second, some types of the constructions seem to be tied to specific semantic functions. For example, most of the highly frequent *from/in* prepositional phrases in academic writing, for example, *in terms of*, *in the context of*, *in this/that case*, *in the form of*, and *in general* are either framing (tangible/intangible) expressions or qualifying expressions (also called hedges). Third, it appears that a few rather well-known constructions did not make the most frequently-used list but their lesser known counterparts almost did. For example, while *with/in reference to* showed a frequency of less than 10 PMWs, *by reference to* managed to register 28.57 tokens PMWs in the BNC's academic writing sub-corpus, but it did not make my most common list because its use is limited mostly to law where it registered 61.32 tokens PMWs. Fourth, while the constructions are, as expected, mostly formal expressions not common in speech, for example, *the fact that* (which was more common even than *the use of*), *in the case of*, *by virtue of*, *in an attempt to*, *in light of*, and *give rise to*, there are actually a few exceptions. Several common colloquial constructions, for example, *look at*, *NP say that*, *talk about (det+N)*, made the list, with the first two appearing in Band 1. In fact, even the colloquial MWC *and so on* showed a frequency of 24.32 PMWs and would have made the list had it had enough range distribution in natural science/engineering. An examination of the tokens reveals that *and so on* even appeared over 60 times in renowned law journals such as the ABA Journal and *the Harvard Journal of Law & Public Policy*. Furthermore, *take something into account* is used far more frequently than its seemingly more formal counterpart *take something into consideration*, with a 62.03:4.11 and 31.24:5.91 PMWs ratio in BNC and COCA respectively. This fact may be interpreted as evidence for constructions as a usage-based phenomenon: in the case of *into account*

vs. *into consideration*, the former is a much more preferred usage for most writers in academic English.

American vs. British English

This study has found some usage differences in academic written MWCs between American and British English with some MWCs found mostly in American English and some others primarily in British English as can be seen in the selected examples given in Table 3. It is interesting to see that in some related pairs (e.g., *as long as* vs. *as far as* and *in general* vs. *as a whole*), one is preferred by Americans and the other by the British. In some of the other examples, the MWCs (e.g., *in light of/take account of*) occur mostly in just one English variety, suggesting again that they are likely usages primarily in this particular variety. However, some of the differences appear to have resulted in the difference in the data makeup between the two corpora. This data composition difference can be seen in the distributional difference of the constructions (the last one in the table). The high frequency of *in this chapter* and the very low frequency of *in this article/paper* in BNC can be explained by the fact that the BNC academic writing data is composed mainly of 70% books/textbooks; the reversed distribution of the two constructions in COCA results from the fact that the COCA academic writing consists entirely of journal articles. Then there are also some differences whose causes appear to be difficult to determine, including the much higher frequency of *call for/in place/percent of (det+N)* in COCA and of *in practice/set out/set up* in BNC. The reason could be a difference in the topics and disciplines of the articles and books or a difference between American and British diction in academic writing, or both.

Table 3: Examples of usage difference between AE and BE

	Frequency in COCA (PMWs)	Frequency in BNC (PMWs)		Frequency in COCA (PMWs)	Frequency in BNC (PMWs)
	Preferred in AE			**Preferred in BE**	
as long as	**33.46**	9.20	*as far as*	18.40	**46.77**
(be) viewed as	**38.01**	19.31	*(be) regarded as*	28.80	**117.47**
in general	**90.43**	15.13	*as a whole*	41.90	**92.16**
keep in mind	**9.10**	1.63	*bear in mind*	3.28	**22.90**
with/in reference to	**9.84**	2.7	*by reference to*	1.95	**28.57**

(continued)

	Frequency in COCA (PMWs)	Frequency in BNC (PMWs)		Frequency in COCA (PMWs)	Frequency in BNC (PMWs)
	Far more in AE			**Far more in BE**	
access to (det+N)	**120.20**	59.80	*as we have seen*	5.75	**33.13**
call for	**80.66**	30.33	*give rise to*	16.45	**56.75**
focus on	**240.16**	50.34	*in practice*	24.06	**98.03**
in light of	**29.30**	3.10	*set out*	17.50	**75.27**
in place	**39.53**	9.98	*set up*	43.19	**92.95**
x percent of (det+N)	**246.54**	14.9	*so far*	38.00	**105.14**
regardless of	**55.71**	24.39	*take account of*	3.40	**25.79**
with respect to	**57.88**	19.46	*the way in which*	13.92	**63.01**
in this article/paper	**49.62**	12.33	*in this chapter*	0.49	**44.61**

CONCLUSION: LIMITATIONS OF THE STUDY AND PEDAGOGICAL IMPLICATIONS

Limitations of the Study

While the study has produced some interesting and useful findings, it has a few limitations. First, the query of the constructions was based on items found in published research and dictionaries and may thus have excluded some frequent constructions. An automatic construction extracting program may overcome this problem and should thus be used in future large corpus studies when it is available. Second, the classification of the semantic functions of the constructions may lack precision and reliability. Although this study adopts Biber and colleagues' system, the application of the system involves subjectivity and there are some items whose classification is open to question. Third, the notation method used in representing the MWCs based on incomplete LBs is not yet as systematic as it can be. More work is needed to make it more systematic. Finally, empirical studies are needed to determine the usefulness of a list of general academic MWCs in the teaching of academic writing.

Pedagogical Implications

The list of the most common MWCs and the new findings about

their use produced in this study may assist students in more effectively grasping these constructions in their writing. For example, teachers can use the list in developing various learning and teaching activities to raise students' awareness of these common MWCs and to encourage them to use them in their writing. Yet, as Byrd & Coxhead (2010) correctly note, there are several challenges in using lists of MWCs in academic writing classes, such as matching lists of MWCs with the specific needs of the students and dealing with "contradiction between analytical approach in teaching and use as unanalyzed chunks" (p.55). Wray's (2000, 2008) detailed discussions of this contradiction and the challenges it presents to language teaching deserve close attention in the teaching of MWCs.

Given that this list of MWCs is based on general academic writing rather than discipline-specific writing, it is most appropriate for general pre-/post-university-matriculation writing classes. Also, the different types of MWCs on the list may require different learning approaches. For instance, those fixed MWCs (e.g., *for example/in terms of/make up*) may be best learned as unanalyzed chunks while those unfixed (e.g., verb/clause constructions) should perhaps be analyzed to help students grasp their schematic patterns so they can use them productively. For phrasal verb constructions, research has shown a cognitive approach focusing on their semantic motivations/patterns is effective (Boers & Lindstromberg, 2008).

Furthermore, the academic sub-corpora of COCA/BNC may be especially helpful for students in learning the MWCs on the list. Students may search and examine the examples of the constructions in a concordancing format and in the process they can often identify their usage patterns. Besides having students conduct corpus searches, teachers should also provide students with ample academic reading materials to help them gain adequate exposure to the common MWCs through "multiple focused encounters in context and in classrooms" (Byrd & Coxhead, 2010, p.56). Byrd & Coxhead (2010) also present some very specific techniques for teaching MWCs such as the use of vocabulary notebooks and "class vocabulary boxes" (p.57). In short, if used appropriately based on student needs, the results of the study can help make the teaching of general academic MWCs both more efficient and effective.

Notes

1. The term construction is adopted over expression/phrase/unit because it is a term preferred by contemporary linguistic theories such as Cognitive Linguistics.
2. However, Biber (2009) has pointed out that MI may not be a reliable measure for LBs because it may (1) overlook the order of the words in a sequence, a key feature of LBs and (2) disfavor MWCs composed of high frequency words, including functional words (e.g., prepositions).

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APPENDIX I

The Most Frequently-Used Constructions in Academic Writing by Frequency

Note: *All the verbs given in the infinitive/present form are intended to represent their different forms (e.g., "be" in "there be ..." stands for is/was/are ...; "suggest" in "NP suggest that" also stands for suggests/suggested).*

Band 1

(with 100 or more tokens PMWs)

such as (det+N), for example, as well as (det+N), NP suggest that, according to (det+N), (be) based on (det+N), there be det+N, there be no NP, a/the (large/small) number of, out of (det+N), one of (det+N), NP show that, be/to be able to VP, focus on (det+N), (as) (a) part of (det+N), NP argue that, in addition (to), (modal V) lead to (det+N), the fact that (det+N+VP), (be) associated with (det+N), in order to VP, (be) used to (VP)/in/as, (to) deal with (det+N), tend to VP, NP say that, the use of (det+N), in fact, refer/(be) referred to (as) (det+N), NP indicate that, in+the name of a country/state/region (e.g., the U.S.), in terms of (det+N), (of) some of (det+N), (at/by) the end of (det+N), result in (det+N), (be) related to (det+N), (the way/ways) in which (det+N)+VP, NP find (mostly in the past tense) that, be (more) likely to VP, X percent of (det+N), the/(possessive) ability to VP, (be) due to (det+N), (in) the case of (det+N), as well, for instance, take place, NP believe that, apply/be applied to/for, (in) the development of (det+N), many of (det+N), of course, the nature of (det+N), so that+clause, as a result (of det+N), point out, in/by contrast, on the other hand, that is (=i.e.), the effect(s) of (det+N), consist of (det+N), (be) involved in (det+N), contribute to (det+N), (in) a variety of, depend on (det+N), (be) found in (det+N)/to VP, (be) designed to VP/for, (be) seen as (det+N), come from (det+N), each of (det+N), as to wh-clause/NP, NP assume that (det+N+VP), participate in (det+N), NP claim that (det+N+VP), look at (det+N), access to (det/N), the/adjective amount of, the importance of (det+N), occur in (det+N)

Band 2

(with 50–99 tokens PMWs)

account for [det+N], the presence of, in practice, it is possible to VP/that, at all, at the same time, ensure/to ensure that, (in) the form of (det/N), NP state that, so far, a/this/the kind of, attempt (verb) to, set up, as a whole, in general, (at) the time of (det+N), the role of (det+N), (in) the absence of (det+N), (be) regarded as (det+N), NP is one of (det+N), (be) required to VP/for, respond to (det+N), (for) the purpose of (det+N), as/so far as (clause/NP), go on (to), NP think that, (be) similar to (that/those/det+N), (be) known as (det+N), the existence of (det+N), on the basis of (det+N), NP mean that, this/the type of, call for, (to) the question of (det+N), (be) different from, (a/the)/(wide) range of, derive/be derived from (det+N), (in) the process of, (in) the work of (det+N), the relationship between (det+N), the results of (det+N), NP report (mostly past tense) that, (at) the level of (det+N), NP know that, in turn, to do so, an attempt to/attempt (V) to VP, a/the function of (det+N), in response to, the value of (det+N), a series of, a/the study of (det+N), (as) a matter of, in this/that case, the concept of, carry out (by), belong to (det+N), as if+clause, set out, if there be NP, (in) the context of (det+N), in this article/chapter, the history of (det+N), make up/be made up of, the idea of, (be) included in (det+N), his or her, (be) obtained from/by, add to (det+N), allow for (det+N), with respect to (det+N), regardless of (det+N), amount to NP, the extent to which, give rise to NP, be going to VP, in other words, reveal that, it is clear that, the need to VP, a set of, the rest of (det+N), the problem of, (at) the beginning of (det+N), NP imply that

Band 3

(with 20–49 tokens PMWs)

in the course of (det+N), talk about (det/N), the difference between (det+N), a/the consequence of (det+N), (be) discussed in (det+N), let us/me+infinitive, NP demonstrate that, (be) made in (det+N), (be) exposed to, it is important to VP, in relation to, a lot of, the distribution of, with regard to (det+N), the position of (det+N), this/the sort of, the structure of (det+N), an/the analysis of, (be) defined as, turn to NP (typically a topic/issue), it is necessary to, as/so long as, it is difficult to VP, the issue of (det+N), the size of (det+N), in place, after all, (adjective) implications for, the needs of (det+N), it is impossible/not possible to, take up, a period of, take on, cope with, see table X, (NP), (be) attributed to, NP agree that, turn out, in time, in favor of, the center of (det+N), in public, it seems/appears that, in detail, build up, (in) the face of, the area of, differ from, look for, it is likely that, (be) attached to (det+N), (be) affected by (det+N), emerge from, as for, for the first time, in light of, at the beginning of, on the part of, find out, benefit from (det+N), divide/be divided into, (be) aimed at, to date, the same as, take/be taken into account, as long as, make use of

APPENDIX II

The Most Frequently-Used Constructions by Semantic Functions

Note: *Some of the "NP V (e.g., believe) that" constructions are listed twice, once in the referential reporting/describing/interpreting type (when they are used in second/third person) and once in the epistemic stance type (when used in the first person, e.g., I/WE argue/believe that).*

1. Referential/Ideational

1.1 Framing/Intangible framing attributes: according to (det+N), (be) based on (det+N), in terms of (det+N), (by) the fact that, (in) the case of (det+N), (in) the nature of (det+N), in this/that case, on the basis of (det+N), in practice, (as) a matter of, the way/ways in which (det+N)+VP, as/so far as (e.g., as far as I/we know), on the basis of, if there be NP, in relation to, (in) the context of (det+N), (in) the role of (det+N), (in) the absence of (det+N), as/so long as, the extent to which, in light of

1.2 Tangible framing attributes: (in) the form of (det/N), (as/in) the size of (det+N)

1.3 Identification/Identity specification: there be no NP, there be det+N, one of (det+N), refer/(be) referred to (as/det+N), (be) related to (det+N), (be) regarded as (det+N), a/this/the kind of, (be) similar to (that/those/det+N), (be) known as (det+N), a/this/the type of, NP is one of (det+N), (in) a variety of, a/the study of (det+N), his or her, this/the sort of, a/the function of (det+N)

1.4 Qualifying: at all, as a whole, in general, in detail,

1.5 Quantity specification: a/the (large/small) number of, (as) (a) part of (det+N), some of (det+N), (a/the) (wide) range of, many of (det+N), X percent of (det+N), each of (det+N), the/adjective amount of, a series of, a set of, the rest of (det+N), a lot of

1.6 Referential place/text/direction: in+the name of a country/state/region (e.g., the U.S.), in this article/chapter, in public, see table X

1.7 Referential time/sequence: (at/by) the end of (det+N), (at) the time of (det+N), (in) the process of, (at) the beginning of (det+N), in the course of (det+N), a period of, in time, for the first time, at the beginning of, to date

1.8 Reporting/Description/Interpretation:

NP suggest that, NP show that, (as) NP argue that, (be) used to (VP)/in/as, (to) deal with (det+N), NP say that, NP indicate that, result in (det+N), take place, NP believe that, (modal V) lead to (det+N), NP find (mostly in the past tense) that, point out, access to NP, consist of (det+N), contribute to (det+N), depend on (det+N), apply/be applied to, (be) designed to VP/for, (be) seen as (det+N), come from (det+N), occur in (det+N), focus on, (be) found in (det+N), NP assume that, participate in (det), NP claim that, look at (det+N), account for (det+N),

the presence of (det+N), to ensure that/NP, NP state that, an attempt to/attempt (verb) to VP, set up, the/(possessive) ability to VP, (be) required to VP/for, respond to (det+N), go on (to), (in) the work of (det+N), NP think that, the importance of (det+N), NP mean that, call for, (be) different from, derive/be derived from (det+N), emerge from, NP report (mostly past tense) that, NP know that, carry out, belong to (det+N), set out, give rise to NP, to do so, make up/be made up of, (be) included in (det+N), add to (det+N), take/be taken into account, allow for (det+N), amount to NP, be going to VP, in response to, NP reveal that, NP imply that, (be) discussed in (det+N), (be) made in (det+N), talk about, (be) exposed to (det+N), NP demonstrate that, a/the consequence of (det+N), be defined as, turn to NP (typically a topic/issue), it is difficult to VP, take up, take on, cope with, (be) attributed to, (NP) agree that, turn out, build up, differ from, the distribution of, (be) attached to (det+N), (be) affected by (det+N), look for, benefit from (det+N), divide/be divided into, (be) aimed at, the rest of (det+N), the problem of, the same as, find out

1.9 Multifunctional: the use of (det+N), (be) associated with (det+N), (in) the development of (det+N), (be) out of (det+N), the effect(s) of (det+N), (be) involved in (det+N), (for) the purpose of (det+N), (to) the question of (det+N), the relationship between (det+N), the results of (det+N), (at) the level of (det+N), the existence of (det+N), the difference between (det+N), the value of (det+N), the concept of, the need to VP, the idea of, the structure of (det+N), (be) obtained from/by, an/the analysis of, the history of (det+N), the position of (det+N), the issue of (det+N), the center of (det+N), in place, on the part of, the area of, (be) attributed to, the needs of (det+N), (adjective) implications for, make use of

2. Discourse/Textual Organizers

2.1 Linking: such as (det+N), for example, as well as, in addition (to), in fact, in order to/that, so that+clause, so far, due to, for instance, of course, by/in contrast, as a result (of), that is, on the other hand, as well, at the same time, in turn, in other words, as a consequence (of), regardless of (det+N), as long as, after all, in time

2.2 Topic introduction: as to wh-clause/NP, let us/me+infinitive (e.g., examine), with respect to (det+N), with regard to (det+N), as for

3. Stance/Interpersonal/Impersonal Expressions

3.1 Epistemic stance: NP (I/We) argue that, NP (I/We) believe that, NP (I/we) think that, NP (I/We) know that, NP (I/We) insist that, (be) in favor of

3.2 Attitudinal/Modality stance: be able to VP, tend to VP, be (more) likely to VP, it is possible to VP/that, be going to VP, it is clear that, it is necessary to VP/that, it is important to VP, it seems/appears that, it is impossible/not possible to VP, it is likely that, as if+clause

Chapter 19

Conclusion

The studies reported in the previous chapters of this book have clearly shown that language description and teaching today have been greatly enriched and significantly enhanced by the new linguistic theories (such as SFL, corpus linguistics, and cognitive linguistics) and by the research findings engendered by these new linguistic theories and approaches. The studies in the chapters have also revealed that there are many different areas and topics in lexico-grammar description and teaching as well as diverse approaches that may be used to investigate these topics. For example, some chapters in Part I have demonstrated how the use of corpus analysis helped, among other things, clarify object omission in English — a complex structural usage question that has important implications for ESL/EFL learners — and make lexico-grammar learning more interesting and engaging. Another chapter in Part I shows how corpus-based cognitive analysis can help uncover the motivations behind common but difficult English collocations and hence make such collocation easier for ESL/EFL learners to grasp. Similarly, the chapters in Part II have illustrated, among other things, how corpus-based cognitive analysis may enable us to accurately differentiate synonyms in a set and the ways native and ESL/EFL speakers make selections among synonyms. On the other hand, the chapters in Part III have exhibited how corpora may be used to help develop useful word lists of various categories, including academic multiword units, idioms, linking adverbials, and phrasal verbs.

However, it can also be gleaned from the studies in the previous chapters that there is still a lot of work to be done in order to make the description and teaching of English lexico-grammar better and more effective. Below I discuss the future directions for our endeavor by focusing on the following five areas of work where I deem more effort is needed: (1) Construction of more corpora, especially specialized corpora and learner corpora, (2) Creation of more corpus-informed teaching materials, including specialized word lists by using rigorous methodology, (3) Production of more and better description of challenging lexico-grammatical issues, (4) Development of more innovative and effective

corpus-based and/or cognitive linguistics-inspired learning/teaching practices and tools, and (5) Designing and conducting of more methodologically-rigorous empirical studies to test the effectiveness corpus-based and/or cognitive linguistics-inspired language teaching.

CONSTRUCTION OF MORE CORPORA, ESPECIALLY SPECIALIZED CORPORA AND LEARNER CORPORA

While a lot of corpora of various types have already been built, many more well-designed corpora are still needed for both language research and learning/teaching purposes. Clearly, ESL/EFL learners as a whole will continue to benefit from mega-sized and multi-purpose corpora, such as Davies's (2008–) COCA, because such corpora provide learners with language data of enormous size in many different registers and also with various search functions. However, what the ELT field really needs the most now are specialized corpora and learner corpora. The need for specialized corpora, such as corpora of aviation, food science, and pharmacy, is evidenced by the research finding that the use of lexico-grammar is academic discipline-specific (Hyland & Tse, 2007; Nation, 2013) and by the fact that more and more ESL/EFL students and professionals are learning English in specialized academic or professional fields. In fact, researchers have been developing such specialized corpora for research purposes (e.g., Grabowski, 2015; Liu & Han, 2015). Regarding the need for building more learner corpora, it is a well-known fact that learner corpora enable both researchers and teachers to better understand learner language, especially the problems in learner language, so we may be better able to help learners learn. One clear piece of evidence for the importance of learner corpora is in the launching of *International Journal of Learner Corpora Research* in 2015. Several important studies (Gries & Deshors, 2015; Granger, 2015) have already appeared in this journal with a few others in the pipe line (Crosthwaite, 2016; Deshors, 2016; Garner, 2016). These studies offer new insights into the diverse types of lexico-grammatical issues about learner language that may be explored using learner corpora as well as new interesting and sophisticated methods that may be used to examine such issues.

Given the need for more specialized corpora and more learner corpora and given the technology readily available today, it is important to note that even teachers with little knowledge and/or experience in

corpus-based research can actually build corpora for their own teaching and research purposes. For example, a teacher of banking business English can easily create a corpus of such English by simply downloading articles and news reports related to banking business English and saving them as a text file to work as a corpus. Then, the teacher can search the corpus by using free corpus search engines such as Anthony's (2014) powerful and user-friendly AntConc program. Similarly, a teacher or a group of teachers can easily build a written learner corpus from their students' writing to help them more easily identify the lexico-grammatical usage patterns and issues in their students' writing. They can use the learner corpus to find out, among other things, their students' vocabulary profile, i.e., what percentage of their words belongs to the first 2000 most frequent common words and what percentage belongs to the academic words found in Coxhead's (2000) or Gardner & Davies's (2014) academic word list. The information can then be used to design lesson plans and activities to help students learn the words they need most and thus to enhance their vocabulary.

CREATION OF MORE CORPUS-INFORMED TEACHING MATERIALS, INCLUDING MORE SPECIALIZED VOCABULARY LISTS BY USING RIGOROUS METHODOLOGY

In the past two decades, many more corpus-informed reference and teaching materials have been developed (e.g., Biber, Johansson, Leech, Conrad, & Finegan, 1999; Conrad & Biber, 2009; McCarthy & O'Dell, 2005, 2008). These publications have had a significant impact not only on teaching material development but also on how lexico-grammar is taught. Yet many more corpus-based teaching materials are needed. Here I will focus on the creation of word lists to illustrate the need and the complexity of the work involved in the development of corpus-based teaching materials. As is well known, many useful word lists have appeared so far, including the aforementioned lists of general academic English words (Coxhead, 2000; Gardner & Davies, 2014) and lists for more specialized academic English, such as engineering and medical English (e.g., Lei & Liu, 2016; Ward, 2009). The need for the development of the latter type of word list is again evidenced by the research finding mentioned above that vocabulary use is often discipline-specific (Hyland & Tse, 2007; Nation, 2013). Also, research has shown that specialized academic vocabulary lists

may best serve the needs of ESL/EFL students and professionals who are learning English in a specific field or discipline (Hsu, 2014). However, despite the need, there are still many academic disciplines, vocations, and professions for which no word list has been developed. In other words, there is a clear need for many more specialized word lists.

Creating a word list, especially a specialized word list, is no easy task, though. One important issue that needs to be considered in the development of a specialized word list, such as an academic word list in a specific field or discipline like medicine, is to ensure the items on this list are not, on the one hand, among the most common 2000 words (or not words on the General Service List (GSL) and general academic words and also not technical terms on the other hand (Lei & Liu, 2016; Nation, 2013). This is because including words from the aforementioned groups will make this specialized word list too large, rendering it essentially useless. However, as research has shown, some of the most common words and general academic words may also have specialized academic meaning (Gardner & Davies, 2014; Lei & Liu, 2016), e.g., *arrest* may mean sudden cession of function of the heart as in *cardiac arrest*. Their special meanings in a special academic discipline would seem to call for their inclusion in a specialized word list.

Another difficult question to consider in the development of specialized academic word lists is how specialized these lists need to be. As we all know, an academic field or profession may have many sub-fields of disciplines. For example, within medicine, there are numerous sub-fields, such as cardiology, dermatology, gastroenterology, oncology, and pathology. Do we need to develop a word list for each of the sub-disciplines? On the surface, it makes good sense as it would help serve students and professionals studying and/or working in a given sub-field. Yet such a list may likely contain many technical terms. Then how useful will such a list really be when most of the words are technical terms? It is thus clear that creating a specialized words list requires thoughtful consideration of many issues as well as rigorous methodology as shown in Lei & Liu's (2016) and Liu & Han's (2015) studies.

PRODUCTION OF MORE AND BETTER DESCRIPTION OF CHALLENGING LEXICO-GRAMMATICAL ISSUES

It is a well-known fact that some L2 lexico-grammatical aspects or items are notoriously difficult, much more difficult than other language

aspects or items, and their difficulty levels often vary based on learners' L1, as can be seen in Chapters 2, 4, and 9 (Liu, 2008; Liu & Gleason, 2002; Liu & Zhong, 1999). For example, Chapter 2 (Liu & Gleason, 2002) showed that the English article *the* was extremely difficult for L2 learners, especially those whose L1 does not have articles. Also, the research results in Chapter 9 (Liu & Zhong, 1999) suggest that, due to their native cultural and linguistic influence, Chinese EFL learners displayed great difficulty in grasping English words whose connotative meanings differ significantly from those in Chinese. Similarly, by exploring why speakers of radical pro-drop languages like Chinese tend not to omit the subject but frequently drop the object, Chapter 4 (Liu, 2008) uncovers two key reasons for this issue: (1) unlike in the subject-verb relationship where agreement of number is needed (e.g., "One student is needed" but "Three students are needed"), there is no such agreement between the verb and the object and (2) there are some limited object-omission cases, which may work as false positive evidence for Chinese ESL/EFL learners. Such research findings help us describe the English usages more accurately, which in turn should make the learning of such difficult lexico-grammatical usages easier. More accurate identification and description of such challenging lexico-grammatical English is thus needed. The following are two examples of potential challenging lexico-grammatical items where more accurate or more adequate description seems needed to help learners more accurately and effectively grasp the use of the items.

The first example relates to the English idiom *cutting corners*. The Chinese dictionaries that have included the idiom list its meaning exclusively as 偷工减料 (*doing a shading job by failing to do some necessary work and by using cheaper material,* etc.). There is no mention that *cutting corners* can also be used in a positive sense: *not doing or buying certain things in order to save money*, e.g., "Tom and Mary had only two hundred dollars left for the month so they started *cutting corners* by not eating out and not watching movies." Clearly, Chinese dictionaries should add this latter meaning of the idiom to make their description of it more adequate, so Chinese learners can have a complete understanding of the idiom. The other example concerns Chinese students' use of the adverb *wrongly*. Based on the analysis of a two-million-word Chinese EFL written corpus (see Chapter 12, Liu & Zhong, 1999), Chinese students almost exclusively used *wrongly* from the *erroneously/inaccurately/incorrectly/mistakenly/wrongly* synonym set. Yet, in a study where the Chinese subjects were asked to select a synonym

from a set to fill in the missing word, they failed to choose *wrongly* each time when it was actually the correct answer, such as in *wrongly accused* and *wrongly imprisoned*. Most of the Chinese subjects chose *incorrectly* and *mistakenly* instead. The research results indicate that Chinese EFL learners do not know that only *wrongly* in the synonym set has the meaning of *unjustly*. This fact suggests that Chinese English textbooks and dictionaries should add this important information about the use of *wrongly* and also the information that *wrongly* should be used mostly in this sense, rather than used in the senses of *incorrectly/mistakenly* as was found in the Chinese EFL written corpus. In short, a lot more work should be done to further enhance the description of English lexico-grammatical items that may be especially difficult for L2 learners of a particular L1.

DEVELOPMENT OF MORE INNOVATIVE AND EFFECTIVE CORPUS-BASED AND COGNITIVE LINGUISTICS-INSPIRED LEARNING/TEACHING PRACTICES AND TOOLS

According to cognitive linguistics, language acquisition is usage-based. This means that learners need a lot of language input and interaction to acquire language, including acquiring specific lexico-grammatical usages. However, in L2 learning, especially in foreign language learning, there is usually not enough input available. This means that L2 teachers need to find effective ways to provide L2 learners with enhanced input in the limited learning time they have so as to help learners grasp their target L2. Corpora are a very useful source of authentic input. More importantly, as research (e.g., Chapters 5 and 6) has shown, corpus-based learning and cognitive linguistics-inspired learning can make language learning more engaging and effective. However, as the same research has also revealed, there are many challenges in corpus-based and/or cognitive linguistics-inspired learning, such as a lack of computers and technology needed and learners' lack of the knowledge and skills needed in the often complex cognitive corpus analyses. Therefore, more innovative and effective learning and teaching practices should be developed to help overcome the challenges involved. Boulton's (2009, 2010) creative use of paper printouts of teacher-generated concordance lines has set us a very good example, as it made the use of computers unnecessary in corpus-based language learning and made corpus-based learning feasible and effective for lower level learners. Another example of such innovative practice is Tyler's (2012)

cognitive linguistics-inspired use of diagram visuals to help students better understand the core and extended meanings of the prepositions *at*, *for*, and *to*. Both Boulton and Tyler have shown that their respective creative teaching practices produced significantly better student learning gains than traditional teaching practices.

Based on cognitive linguistics and research on cognitive linguistics-inspired teaching, an issue particularly challenging that especially needs innovative and effective teaching is helping learners understand the constraints in construction learning. As mentioned in the Introduction Chapter and Chapter 7 (Liu, 2012), language learning according to cognitive linguistics is mainly the learning of constructions, but L2 learners often do not know the constraints and hence produce sentences that violate the constraints on the construction being learned, e.g., *"Please confirm me your receipt of this email," which is not an acceptable V+N+N *Cause-to-Receive* construction, but which the learner produced clearly based on input such as *show me your room/tell me your thought*. Innovative and effective teaching of construction constraints will surely improve construction teaching enormously.

Besides innovative and effective corpus-based learning/teaching practices, more useful corpus-based learning tools should also be built. Currently, there are quite a few such tools and most of them are free. Two of them are worth mentioning here because they boast some very useful functions using avant-garde technology, indicating the future directions for corpus-based language learning tools. One is Cobb's (2016) freely-available Compleat Lexical Tutor, which is a multi-functional language learning and teaching web tool as well as an information-rich web source. Besides offering many corpus-based lexico-grammatical learning functions and activities, it also provides a variety of resources (e.g., corpora such as Brown and BNC) and tools (e.g., Range and VocabProfile). The unique learning functions it offers include corpus-driven error correction and Concord Writer, which allows learners to write while assisted by lexico-grammatical information accessible online. The other web tool representing the directions of the future is Davies's (2016) WordAndPhrase, a multi-function vocabulary web learning tool. It allows one to check the frequency information of any word in the entire COCA corpus and across its registers and its various academic disciplines if the Academic function is selected. Furthermore, one can also use it to check the vocabulary profile of any text entered. By selecting the

information desired, one can find out how many of the words in the text are those in the first 500 words in the Academic Vocabulary List and how many are those in the 500 to 3,000 range of the list. Also, by clicking on any word in the text, one can obtain its frequency information and concordance examples of its use in COCA. Moreover, one can also check whether any string of words in the text is an established phrase, i.e., a multiword unit (MWU); if it is a phrase, then concordance examples of its use in COCA will be displayed. Obviously, ESL/EFL language learners and teachers will welcome many more such corpus-based tools with learning functions that take advantage of avant-garde technology, but are easy to use.

DESIGNING AND CONDUCTING OF MORE METHODOLOGICALLY-RIGOROUS EMPIRICAL STUDIES TO TEST CORPUS-BASED AND/OR COGNITIVE LINGUISTICS-INSPIRED LANGUAGE TEACHING

While there have been many publications about the usefulness of corpus-based language learning and teaching (e.g., Aijmer, 2009; Aston, 2001; Sinclair, 2004), there have not been enough empirical studies that tested the effectiveness of such learning and teaching practices, especially methodologically-rigorous empirical studies. Boulton (2010), Smart (2014), and Tyler (2012) are among a few scholars who have closely examined actual language learning gains students made when taught by a corpus-based method or a cognitive linguistics-inspired method in comparison with such gains when learners were taught by a traditional teaching method. Many more methodologically-rigorous empirical studies of this nature (i.e., studies that rigorously investigate actual language learning gains) are needed so as to ensure that corpus-based and/or cognitive linguistics-inspired learning and teaching practices are indeed more effective than other teaching methods. However, it does not mean that we no longer need methodologically-rigorous empirical studies that examine learners' attitudes toward and their feelings and opinions about the use of corpora in language learning and teaching, the issues that many existing studies on corpus use in language teaching have investigated (e.g., Geluso & Yamaguchi, 2014; Liu, 2011; Liu & Jiang, 2009). Studies on the latter issues are still needed because they

can help us understand not only how learners feel about corpus-based learning and why, but also what challenges are involved and what types of assistance learners need.

CONCLUDING REMARKS

It is now clear that, while great advancements have been made in lexico-grammar description and teaching in ELT, many more advancements are needed and a lot of work is still waiting for us to do. I hope and I am also sure that more and more language researchers and teachers will join us in embarking on this challenging but rewarding quest for better language description and more effective language teaching.

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