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EFFECTS OF LEXICAL SIMPLIFICATION AND ELABORATION ON ESL
READERS' LOCAL-LEVEL PERCEIVED COMPREHENSION

by

Beth Brewer

A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Master of Arts

Department of Linguistics and English Language

Brigham Young University

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BRIGHAM YOUNG UNIVERSITY

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This thesis has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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ABSTRACT

EFFECTS OF LEXICAL SIMPLIFICATION AND ELABORATION ON ESL READERS' LOCAL-LEVEL PERCEIVED COMPREHENSION

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Linguistics and English Language

Master of Arts

This study examines the effects of single word modification on the perceived comprehension of individual sentences. A test was created by randomly selecting sentences from a college level American history textbook. Each sentence was analyzed using Nation's *Range* program, and the lowest frequency verbs were selected for modification. Each target verb was simplified (replaced with a higher frequency equivalent) or elaborated (left in the sentence, but followed by a parenthetical definition). Subjects received both treatment types and unmodified control items in a fifty-sentence test. Each sentence was rated by the subjects, as it was read, according to the amount of information the subject felt they comprehended. Results indicated no statistically significant difference in the comprehension ratings for simplified, elaborated or unmodified items. However, some trends were evident, indicating the possibility of effects that might become apparent with further study.

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CHAPTER ONE

Introduction

Rationale for this Study

For any language learner, reading in a second language (L2) adds a few extra twists to the already acrobatic mental processes of reading. Naturally, facilitating the reading process for L2 readers is a high priority for language researchers, teachers, and, of course, language learners. The questions of how to make the L2 reading process easier and more effective have created a wide variety of theories, approaches, and texts.

Simplification is the label that includes an entire gamut of practices, treatments and strategies designed to expedite reading for language learners. Given the complexity of both reading and language acquisition, it is no surprise that the process of text simplification is (somewhat ironically) an incredibly complex proposition.

Research in other areas of language instruction has provided useful parallels to apply to reading. Study of the use of “foreigner talk,” for example, illustrates the ways that native speakers alter their spoken output with the aim of successfully communicating with a language learner. Herein is a relevant illustration of both the real need for simplification as well as some common modifications that seem to really simplify language. Some of these modifications are a slower speaking rate, restatement, use of basic syntax, elimination of idioms, and of course, use of basic vocabulary. However, applying elements of oral simplification to written text has produced variable results, and no consensus exists as to which type or types of simplification will produce a consistently beneficial result for L2 readers.

A central difficulty in quantifying the merits of text simplification and its effects is the vast variability in texts and readers. Considering the diversity of the ever-expanding corpus of written English, it seems that the only thing more idiosyncratic than a text is the reader trying to navigate it. Any text may have varying levels of difficulty at the discourse, syntactic, or lexical level. For example, a work of fiction might include flashbacks or other unusual organizational devices that occur at the discourse level. A text like this might use simple vocabulary, but the discourse level characteristics might challenge some readers. Likewise, a piece of technical writing might describe a relatively straightforward process, but, at the lexical level, use technical jargon that causes confusion. Between discourse and lexicon, the syntax of a text, which often varies from sentence to sentence, can also be composed in such a way that a reader's understanding is impeded.

Of course, with all the variability, texts do share many common characteristics. These are the characteristics that have been used in the development of some readability formulae. Overall sentence length, average mean length of utterance (MLU), and vocabulary composition can all be measured more or less objectively. Other important characteristics like topic, discourse markers, idiomatic expressions, and background information lend themselves less to discrete calculation, but are still somewhat measurable. These characteristics can themselves be categorized into discourse, syntactic and lexical levels.

Different areas of these three levels have been manipulated in various studies of text simplification and its effects on comprehension. Some work has focused exclusively on vocabulary, while much research has used some combination of elements from

different levels. Also, the measurements used to assess the effects of simplification vary from study to study. Written and verbal recall, vocabulary acquisition, and various comprehension measures are some examples of assessment tools that have been used. Last, subjects from a wide range of proficiency levels and language backgrounds have participated in the studies of text simplification and its effects. It is little wonder, then, that the studies have produced varying and sometimes contradictory results. Language researchers, materials developers, and reading teachers still ask how effective different types of text simplification are and how they should be applied to different proficiency levels.

Purpose of This Study

It is this wide range of variables and results that leads to the present study. The premise of the study is to start at the basic level of a text, the vocabulary, and measure effects of lexical modification on the comprehension of a single sentence. The formation, application, and interpretation of the research instrument will be guided by the following research questions:

Is ESL readers' perceived comprehension of expository sentences affected by:

- a) Vocabulary modifications (simplification vs. elaboration)?
- b) General proficiency level (as measured by TOEFL benchmark scores)?
- c) The interaction of vocabulary modification and proficiency level?

Definition of Key Terms

Lexical Simplification: replacing a low frequency word with a synonymous higher frequency word; or if no one word equivalent is available, replacing a low frequency word with a short phrase consisting of higher frequency words.

Lexical Elaboration: adding a short parenthetical definition (composed of high frequency words) after a low frequency word.

Delimitations

1. Subjects for this study come from advanced levels of an intensive English program associated with a large university, as well as ESL students enrolled in regular classes at the same university. These students have had at least some exposure to academic texts and vocabulary. They are not a representative random sample of English learners at these levels, but instead represent a small intact subset of that group.

2. This study used sentences from a college-level American history textbook. It is understood that this is a high-level text that is quite topic-specific. However, it is a realistic sample of a text that these subjects could expect to encounter in their educational experience.

3. As far as possible, the test was administered by the researcher personally. However, in deference to needs of classroom teachers and possible logistical conflicts, the test was administered in some cases by the students' teachers. In these cases, the teacher received verbal and written instructions from the researcher, and a follow-up was conducted to ensure that the test was administered in an acceptably consistent manner.

CHAPTER TWO

Review of Literature

Introduction

While reading is an undeniably complex process, it requires vocabulary recognition and comprehension at its most fundamental level (Koda, 2005; Laufer, 1997). Vocabulary forms the foundation from which a reader builds meaning at a sentence, paragraph, and discourse level; no matter how many grammatical structures a reader has mastered, no matter how high a level of cognition that a reader operates at, if that reader cannot access the meaning of a critical amount of vocabulary in a text, the reading process will break down (Laufer, 1997). Grabe (2002) points out that both a “large recognition vocabulary and automaticity of word recognition for most of the words in the text” (p. 50) are central to an ESL reader’s ability to comprehend a text under normal conditions. Additionally, much research has shown a correlation between vocabulary size and reading comprehension scores in ESL learners (Hirsh & Nation, 1992; Koda, 2005; Laufer, 1992). Much of this research has shown that as subjects demonstrate greater general vocabulary knowledge, their reading comprehension scores tend to increase.

While the importance of vocabulary in L2 reading is well established, the methods for accommodating L2 readers with insufficient vocabularies vary widely and many are still in the formative stages. Many approaches exist that claim to facilitate the L2 reading process. Some view authentic, or unmodified, texts as the best medium for L2 readers; others use methods of modifying texts at the lexical, syntactic, or discourse levels. Still others create entirely new texts that are carefully composed using a limited lexical and syntactic range of features.

This survey of literature will briefly explore the justification for text modification, especially at the lexical level, and will more deeply look at research of text simplification and elaboration, as well as methods for measuring readers' perceived comprehension.

Role of vocabulary in Second Language Reading

Overall vocabulary knowledge is not only important in reading, but research also indicates that if a reader cannot readily access meaning for 95-98% of the specific vocabulary contained in a particular text, comprehension will be frustrated (Hsueh-chao & Nation, 2000; Nation, 2001). Readers may be able to "read" a text in the sense that they can mentally process the text in some way (i.e., that they can form some mental or aural representation of the printed text), but true understanding cannot be achieved through such processes alone; and it is this understanding that is the underlying goal of most reading. Grabe (2000) states that although there are a variety of purposes for reading in a second language, "the most common, and most basic, reading purpose is reading for general understanding" (p. 50). So, while reading involves a complex interplay between background knowledge, cognitive processing, recall, and lexical and grammatical knowledge, the importance of lexical understanding outweighs the other types of knowledge and processing (Laufer 1997).

At this point, the dilemma of second language reading becomes clear. For readers to optimally understand a text, they must already "own" a certain amount of the vocabulary items presented to them in the text. For instance, research has shown that only after a reader's lexicon reaches approximately 3,000 word families can higher-level processing begin in the reading process for most texts (Laufer, 1997). However, language learners must learn the vocabulary somewhere, and often a written text is the best source

for new vocabulary, especially more formal, academic vocabulary. The paradox is essentially that the language base L2 readers need is largely contained in written text, but L2 readers often lack the language base they need to be able to comprehend the texts. To illustrate the disparity in lexical resources, L1 English readers typically have a solid base of 6,000 words in their lexicon when beginning formal reading instruction in kindergarten, not to mention their extensive grammatical, pragmatic, and cultural knowledge (Grabe, 2002; Samuels et al., 2005). How, then, do L2 readers bridge this vocabulary gap to achieve understanding in L2 reading? Even if L2 readers have extensive experience reading in their native language, they still have the disadvantage of a far smaller L2 lexicon (Laufer, 1997).

If the limits of an L2 reader's lexicon place a text beyond their linguistic reach, there are several approaches to bringing the text and the reader together. One approach is to increase the linguistic abilities of the reader; another is to modify the text to decrease the linguistic burden on the reader; finally, an easier text may be chosen to replace the difficult one. The first option is difficult, as vocabulary instruction is time consuming, and mastery of vocabulary requires repeated exposure to target words and repeated production of target words by a learner (McKeown, 1993). Also, theoretically, a learner would have to postpone reading in their second language until their lexicon had reached a level sufficient to allow the negotiation of a variety of texts. Waiting for a learner's lexicon to reach a certain threshold before they attempt second language reading is unrealistic. Thus, providing texts with vocabulary that more closely matches the reader's lexicon is the most viable course of action. Then, as the learner's lexicon continues to

grow, the majority of words encountered in the course of reading a text will presumably fall within the bounds of the still developing lexicon.

Evaluating Unmodified Texts

Traditionally, texts labeled as *authentic* have not been altered to match a certain proficiency level of language learners, and are considered by some to be an unadulterated source of linguistic input for learners (Krashen, 1983). One option for matching texts to the ability and range of a learner is to find so-called authentic texts appropriate for different proficiency levels. However, most unmodified texts are not labeled in terms of difficulty for L2 readers. For a reader or teacher, finding, analyzing, and cataloging so-called authentic texts would be time intensive and require an accurate idea of the complex linguistic makeup of a text, and finding the right content with the right level of vocabulary may be even more problematic. On the other hand, arbitrarily choosing an authentic text and hoping that it falls within the ability range of a L2 reader may be especially difficult. With the wide range of authentic texts available, and the lack of description of the difficulty, it is clear why Tweissi (1998) reaches the cautious conclusion that “authentic texts are not always the best to give to students who are not ready for them” (p. 201).

While considering the practicality of using unmodified texts, it is important to remember that they do have a place in language instruction. However, finding and matching so-called “authentic” texts to L2 readers, especially at lower levels, are tasks that seem to vary between educated guesswork and time consuming labor. This search for only authentic texts ignores the fact that level appropriate, albeit modified, texts already exist (Hirsh & Nation, 1992). It is also important to recognize that authenticity is a

relative construct, or, as Davies (1984) succinctly points out, “Everything the learner understands is authentic for him” (p. 192).

Text Modification

Linguistic modification is a common occurrence in second language communication, as demonstrated in almost any case of a native English speaker interacting with a beginning English learner. Slow rate of speaking, emphasis of key words, use of common vocabulary, and repetition are all modifications to aid comprehension. These adaptations are all ways that an English learner’s negotiation of language can be facilitated, and they are performed almost instinctively by native speakers. Spoken language can be negotiated between the speaker and receiver as the language is generated, and the speaker can adapt the message according to their perception of the receiver’s understanding and proficiency (Hatch, 1983; Krashen, 1983).

However, for readers in a second language, the written input cannot be negotiated in the same way that oral input can be. In short, for negotiation to occur, the material must be adapted before it is received by the language learner (Hatch, 1983). This idea of adaptation or modification often conflicts with the notion of “authentic” input. However, because interaction between writer and reader is largely one-sided, with negotiation of the message depending on the reader’s ability to correctly interpret and process the writer’s message, pre-reading modifications are crucial in aiding comprehension.

The other option for finding linguistically appropriate texts, then, is to change the composition of existing texts so that they are more accessible to the L2 learner. This approach is often referred to as simplification. Davies (1984) defines simplification as “selection of a restricted set of features from the full range of language resources for the

sake of pedagogic efficiency” (p.183). Although the intended outcome of simplification is a text that is more navigable and straightforward, the wide variety of linguistic features in texts and the different possible approaches to simplification lead to the sentiment expressed by Davies that “simplicity is difficult” (p. 181).

To effectively modify a text, researchers have sought to establish parameters defining the readability of a text. Establishing the readability of a text is difficult due to the complex nature of written texts, as well as the fact that there is no single standardized formula for measuring text readability, although a wide variety of definitions of readability exist in the literature (Hatch, 1983; Leow, 1993; Perkins, 1992; Uljin & Strother, 1990; Young, 1999). Additionally, the relative effectiveness of different readability formulas has long been called into question (Beck et al., 1984). Figure 1 outlines some of the main areas which have been addressed in readability formulae. To apply the concept of readability to text modification, it would be necessary to choose an approach to determine readability and evaluate the unmodified texts in all the areas (including vocabulary), and this process would be applied to every text a reader might encounter. Matching texts in this way to readers’ proficiency levels would be so labor intensive as to be infeasible for most readers and teachers.

Figure 1

Aspects of Readability

Vocabulary

- High-frequency vocabulary, less slang, fewer idioms
- Fewer pronouns of all kinds, high use of names for “one,” “they,” “we”
- Definitions are marked
- Lexical information in definitions
- Use of pictures/drawings

Syntax

- Short MLU, simple propositional syntax
- Left dislocation of topics
- Repetition and restatement
- Less pre-verb modification

Coherence (Discourse)

- References: unambiguous, close, direct
- Sufficient background information
- Clear relationships between events

(Beck et al., 1984; Hatch, 1983, p. 66).

While this summary of facets of readability does present a somewhat overwhelming range of areas in which a text might be evaluated, the division of levels of text presents an interesting question. If the difficulty of a text can be divided between words, sentences, and discourse, might modification at the individual levels have differing effects on a reader? For instance, might the difficulty of the words themselves have more or less of an effect than the difficulty of a sentence? Koda (2005) points out that the effect of each variable is unknown and that “if some features have more impact on processing efficiency than others, we need to isolate them, disentangle their effects, and explore causal linkages with specific reading difficulties” (p. 49). This disentangling of effects will be the focus of the present study.

Lexical and Syntactic Simplification

Text simplification is one way for second language learners to access the general message of authentic texts, without being stymied by language that falls outside the bounds of their abilities. Along with Davies’ (1984) definition cited earlier, simplification has also been generally defined as any modification designed to make text more

accessible to a reader (Young, 1999). Oh (2001) further specifies simplification as applying to the more basic units of vocabulary and syntax in a text. These differing

Table 1

Survey of Simplification Studies and Results

Study	Proficiency levels/ Second language	Simplification Area	Instrument Type	Results
Oh, 2001	Low/High English	Sentence length, syntax, lexicon	Comprehension (replication, synthesis & inference)	Higher proficiency learners benefited more from simplification
Young, 1999	2 nd year university/ Spanish	Mostly lexicon	Written recall and comprehension	Aids comprehension at word level, not overall
Tweissi, 1998	Intermediate/ English	Lexicon, syntax, (separate & combined)	Multiple choice achievement test	Lexical modification aides factual extraction
Leow, 1997	2 nd semester university/ Spanish	Discourse (text length)	Comprehension and form recognition	Significant aid to comprehension, but not form recognition
Yano et al., 1994	Varying/ English	Sentence length, syntax, lexicon	Comprehension (replication, synthesis & inference)	Simplified forms significantly aided comprehension
Leow, 1993	Low/Intermediate Spanish	Lexicon & syntax	Pretest: Recall Posttest: Form recognition	Comprehension aided, Not intake
Blau, 1982	Low/Medium/High English	Syntax, sentence length	Multiple choice (main idea)	Shorter sentence length does not aid comprehension

definitions indicate an important distinction that must be made when dealing with any kind of text simplification—namely, that simplification can apply to different levels of a text. As previously mentioned, research in readability and simplification has generally drawn lines between lexicon (word level), syntax, (sentence level), and discourse (text level) in written texts.

On the surface, text simplification seems an attractive possibility for aiding reading comprehension for L2 learners. This has been shown to be the case in numerous studies of simplification, several of which are characterized in Table 1. Several other studies in the table, however, have demonstrated that simplification at the different levels of a text may actually hinder comprehension or other aspects of language learning. Additionally, Oh (2001) points out that lexically simplified texts limit learners' exposure to vocabulary and structure in the target language and may inhibit the development of reading skills such as inference. In examining the strengths and weaknesses of text simplification, it is clear that some intuitive assumptions about simplification may actually be false, and that different types of simplification may have unanticipated consequences, especially when considering varying proficiency levels of readers.

Simplifying at the syntactic level has been defined as shorter sentences, increased clarity between sentence constituents and a closer adherence to the basic SVO word order of English (Beck et al., 1984; Hatch, 1983). It seems logical that if sentences look easier to a native speaker, they will be easier for an L2 reader to comprehend. However, a foundational study by Blau (1982) found that syntactic simplification resulted overall in lower comprehension for language learners. In this study, the lexicon was unmodified, but the sentences were shortened, or modified to provide clues about relationships

between constituents. Here, simplification at the syntactic level actually seemed to frustrate the goal of reading.

At the vocabulary level, deciding how or what to simplify depends on how lexical complexity is defined. A common measure of a word's complexity is tied to frequency. The prevailing assumption is that more common words are naturally more familiar to readers, and therefore more comprehensible. Measuring readers' knowledge of more frequently occurring words seems to support this assumption (Laufer, 1992). Lexical simplification can also entail replacing more complex multisyllabic words with shorter, presumably simpler, equivalents (Oh, 2001).

In a more recent study, Tweissi (1998) compares syntactic and lexical simplification within the same study. This research tests syntactic and lexical simplification together and separately. Additionally, the study examines extensive simplification versus partial simplification. The comprehension test results indicate that lexical simplification alone is most effective, followed by syntactic. The results further indicate that mixed lexical/syntactic simplification applied to more structures is less effective than mixed simplification applied to fewer structures. So, in this case, it appears that when more types of simplification are used, it is more effective to apply that simplification to less of the text. This study underscores how varied the effects of amount and type of simplification can be for readers.

Another study by Young (1999) attempts to measure the effects of simplification that is mostly lexical, but again mixes in syntactic and discourse simplification as well. This study actually indicates that linguistic simplifications cannot compensate for effects that unfamiliar cultural elements and text length might have on a reader. Overall, Young

concludes that simplification will not necessarily aid comprehension of a text. Rather, the number of individual words that a reader will understand would increase. This raises again the question of measuring the relationship between number of understood words and overall comprehension of a text (Hsueh-chao & Nation, 2000). Young concludes as well that simplification may overemphasize the importance of every individual word in a text, which could frustrate L2 readers, a concern that is echoed in other studies of simplification (Block, 1992). Again, the question of what is the optimum amount of simplification is raised, but not definitively answered. What is clearly shown are the complex interactions that occur when attempting to quantify and manipulate several aspects of a text at once.

Elaboration

Thus far modification has been discussed only in terms of simplification, which can be thought of as reductive in nature. However, another form of text modification exists—namely, elaboration. As its name implies, elaboration entails adding some type of linguistic information to aid comprehension. While it may seem ironic that more language to process would make comprehension easier, the increased amount of information has been shown to produce positive effects. Elaboration is again variably defined in different contexts. Young (1999) defines elaboration as modifications that “involve writing authentic discourse so that explicitness and redundancy can compensate for unfamiliar linguistic items” (p. 351). That is to say, elaboration provides readers with repetition and clarity, which, while sometimes lengthening the sentences and text, actually appears to provide more facilitation for readability than shortening sentences (Hatch, 1983; Leow, 1997; Oh, 2001; Yano et al., 1984). However, in examining the

effects of elaboration at the different levels of a text (i.e., lexis, syntax, or discourse), most studies have remained at the discourse or syntax levels (Kim, 2003, Young, 1999). Despite this, including characteristics of redundancy and explicitness is possible even at the lexical level. This area of lexical elaboration is one that that has not been examined in depth as of yet.

In examining syntactic simplification and elaboration, shorter is not always better. In fact, as previously discussed, the idea of what constitutes simple and complex sentences has been shown to be somewhat counterintuitive. When longer, presumably more complex, sentences are divided into shorter sentences, the assumption that the shorter sentences would prove more understandable is not always true, and readers' comprehension of the longer sentences is often better (Blau, 1984). Studies showing simplification as being counterproductive raise the question of whether adding information (syntactic or lexical) would be as effective in lowering the cognitive load on the reader.

Lexical elaboration has not been extensively researched. In fact, the term lexical elaboration is not widely used in the research. Explicit lexical elaboration is defined as a target word followed by a definition set off by words or punctuation. The effects of glossing have been researched, but in general, glossing entails a definition in the reader's native language, and is not considered elaboration per se. Moreover, research into native language glossing does not show definitive positive effects on reading comprehension (Young, 1999). Some research of lexical elaboration has focused on recognition and acquisition of words more than measuring overall comprehension. In at least one study, elaborated vocabulary was shown to aid recognition of word forms, but not acquisition of

word meanings (Young, 1999). In light of these limited findings, it is possible that overall comprehension could be aided if recognition of individual words is facilitated by elaboration.

Text Modification and Learner Proficiency

One explanation for the conflicting findings in research involving modified (both simplified and elaborated) and unmodified texts could be an interaction with the nature of the texts and the readers' proficiency levels. Following the results of other researchers, Oh (2001) questions the effect that proficiency might have on the effects of different modification. Blau (1984) also concluded that lower proficiency learners appear to benefit more from a certain type of modification; then, as proficiency levels increase, the same type of modification has a less positive effect on comprehension.

Measuring Comprehension

Like many constructs in language research, no formalized definition for reading comprehension has been agreed upon by the research community. Given the complex, largely internal nature of reading itself, settling on a set of satisfactory parameters for reading comprehension is understandably difficult (Block, 1992; Randi et al., 2005; Yang, 2002). Any reader's ability to recall, access background knowledge, and form appropriate responses overlaps and interacts with the processes of comprehending a text and then demonstrating that comprehension. When the text is in a reader's second language, the complexity of the reading process, of achieving comprehension, greatly increases (Block, 1992).

Because measuring readers' comprehension is central to evaluating a text's accessibility to learners of different proficiency levels, it is essential to define

comprehension for purposes of this study. Yang (2002) explains that “reading comprehension traditionally refers to a readers’ complete understanding or full grasp of meanings in a text” (p. 18). However, complete understanding of a text may not be possible for readers at lower proficiency levels. In this case, an alternative idea of comprehension as understanding “the basic units” (p. 19) of the text is preferable to an idea of total comprehension. Yang (2002) posits that:

Comprehension better refers to readers’ understanding of propositions – the basic units of meaning – in the text. The propositions include words, phrases, sentences, and paragraphs. Therefore, as long as the reader understands the meaning of a certain proposition, he/she is said to be involved in comprehension. Since the propositions consist of words, sentences, or paragraphs, readers’ cognitive levels of comprehension can be graded based on these propositions. That is, one person might only engage in lexical comprehension (words), while another may get involved in syntactic comprehension (sentences), the level of which is obviously higher than the former. (p. 19)

This suggests that different levels of comprehension should be considered and that an understanding of words, the focus of this study, is fundamental and will have a bearing on these levels.

Self-reporting Measures

The challenges of measuring L2 reading comprehension, once *comprehension* has been satisfactorily defined, actually seem to parallel the challenges of L2 reading itself. As Gardner & Hansen (2007) point out, the use of multiple-choice measures in L2 simplification research leaves several questions of validity unanswered. The questions of what type of language to use in comprehension measures (L1? English? simplified English?), as well as the degree to which the language composition of the questions themselves may affect the subjects’ responses, are two key issues that seem to have been left unresolved. This brings into question the validity of studies that require learners to

read and understand the questions before giving their response (e.g., Blau, 1982; Oh, 2001; Tweissi, 1998). While few studies (Leow 1997, Young, 1999) incorporate other facets of reading, such as recall or recognition of grammatical structures, into their evaluations of comprehension, these other skills may not be directly linked to comprehension; for example, a reader's ability to recall a text must not be confused with their ability to understand it initially. While recall or other related skills are important, they remain separate constructs, and therefore somewhat secondary to the primary goal of immediate comprehension.

However, some researchers have turned to learner self reporting of comprehension to overcome the language problems of the test items themselves. Using self-reporting techniques to measure any aspect of language ability or comprehension adds a degree of depth that may be lacking in other types of measures, but is not without its challenges. For example, research has shown that learners at lower levels rate themselves higher than their measured ability, succumbing to "self-flattery," (Ross, 1998, p. 17) while learners at higher levels tend to underrate their actual abilities. This certainly casts a questionable light on self-reporting measures. However, when self-reporting applies to actual comprehension rather than overall linguistic ability, learners might be more trusted to give an accurate representation of their own understanding. In fact, a meta-analysis of self-assessment that included a comparison of reading self-assessments with other skill areas, determined that reading comprehension self-assessments were slightly more valid (Ross, 1998). Additionally, Yang (2002) points out, "One fact that cannot be ignored is that even the less-proficient reader has some competence in

comprehension monitoring since they are able to access the appropriate meaning of certain words or sentences” (p. 35).

While this is somewhat encouraging, Ross (1998) suggests that “there is considerable variation in the ability learners show in accurately estimating their own second language skills” (p.5). Ross asserts that this variation indicates a need to use assessment instruments that incorporate language skills which learners have developed either incidentally or through explicit instruction. In short, certain types of self-assessment may also be affected by language skills, particularly those requiring production in the L2 (think aloud, reading journals, etc.). Therefore, for purposes of the current study, L2 readers will simply be asked to rate their own comprehension, using a predetermined scale with clear and simple descriptors (nothing, very little, some, about half, almost everything, everything). This method mirrors the Cramer (2005) study (see also Gardner and Hansen, 2007), and is similar to the self-reporting measure of perceived comprehension used in Oh (2001).

CHAPTER THREE

Research Design

Introduction

The relationship between vocabulary simplification, elaboration and readers' comprehension of texts has been explored, but not definitively established. This study attempts to determine the effect that vocabulary modification and language proficiency may have on perceived comprehension of expository sentences in English. The following research questions have guided the formation, administration, and evaluation of the research instrument:

Is ESL readers' perceived comprehension of expository sentences affected by:

- a) Vocabulary modifications (simplification vs. elaboration)?
- b) General proficiency level (as measured by TOEFL benchmark scores)?
- c) The interaction of vocabulary modification and proficiency level?

Design Overview

A research instrument composed of fifty individual, unconnected sentences was created. Each sentence contained a low frequency verb that received one of three treatments: simplification, elaboration, or no treatment (control). A rating scale of 0 to 5 was provided for subjects to rate their perception of their comprehension of each sentence, with 5 representing the highest comprehension. Each subject experienced all three treatments.

Subjects

A total of 78 subjects participated in the study; 42 were designated lower proficiency and 36 higher proficiency. Lower proficiency subjects were students at the

Brigham Young University (BYU) English Language Center (ELC), an intensive English program; and higher proficiency subjects were matriculated university students enrolled at BYU. The ELC groups students in five proficiency levels (1-5) based on a battery of tests in grammar, reading, writing, speaking and listening. In this study, the lower proficiency group was comprised of students enrolled in levels 4 or 5 at the ELC. Students from levels 1-3 of the ELC were not considered for use as subjects due to the complex nature of the text being used. Level 1 includes absolute beginners, and level 3 are still at a high beginner level, so level 4 was the lowest level considered for use in the study. Students attending the ELC have generally not passed the minimum TOEFL requirement for attending a university. The higher proficiency group in this study was made up of students from BYU who would have achieved a score of at least 550 on the TOEFL in order to be admitted to the university. Although the division between the two groups is somewhat arbitrary, general proficiency was only considered as a secondary factor in the study. Native language and age (all subjects at least 18 years old) were not considered as variables in the study.

The Range Program

The *Range* computer program (Heatley et al., 2002) was used to determine the verbs that were eventually modified. This program comes with base lists of high frequency English vocabulary that can be used to determine the lexical complexity of one or more texts. According to the program instructions:

Range can be used to compare a text against vocabulary lists to see what words in the text are and are not in the lists, and to see what percentage of the items in the text are covered by the lists. It can also be used to compare the vocabulary of two texts to see how much of the same vocabulary they use and where their vocabulary differs.

The three base lists are defined as follows:

The first includes the most frequent 1000 words of English. The second includes the 2nd 1000 most frequent words, and the third includes words not in the first 2000 words of English but which are frequent in upper secondary school and university texts from a wide range of subjects. All of these base lists include the base forms of words and derived forms. The first 1000 words thus consists of around 4000 forms or types. The sources of these lists are A General Service List of English Words by Michael West (Longman, London 1953) for the first 2000 words, and The Academic Word List by Coxhead (1998, 2000) containing 570 word families. The first thousand words of A General Service List of English Words are usually those in the list with a frequency higher than 332 occurrences per 5 million words, plus months, days of the week, numbers, titles (Mr, Mrs, Miss, Ms, Mister), and frequent greetings (Hello, Hi etc).

This explanation shows that each base list is quite large, because it includes headwords along with inflectional and transparent derivational family members. Thus, the *1,000 most common words* means the 1,000 most common headwords along with their inflectional and derivational forms (e.g., *allow*, and *allowance*, *allowances*, *allowed*, *allowing*, *allows*). The words included in all three base lists cover approximately 87 – 95% of types that a reader will typically encounter in an English text (Nation, 2001). In this study, words that are not included in any of the three base lists are designated as non-list words. The non-list words are not divided into families, so inflectional and derivational forms are counted as unique types by the program. Based on Nation's (2001) findings, non-list words are assumed to be relatively infrequent in English as a whole, but potentially important to a particular text or subject area.

Vocabulary Analysis of *America's Founding Heritage*

America's Founding Heritage (Fox & Pope, 2005), hereafter *AFH*, is a text used in a general American History course at Brigham Young University. The course is a requirement for most students as part of the general education curriculum. The text was selected for use in this study based on the expectation that both the higher-level subjects

(university students) and lower-level subjects (i.e. those wishing to matriculate) would eventually need to negotiate such material.

For the vocabulary analysis of the text, *word* was defined as any string of letters (bounded by spaces) that was included in the body or appendix of the text, excluding numbers, Roman numerals, abbreviations or any punctuation or other symbol (such as ampersand). Although these other symbols and abbreviations must be negotiated by a reader to achieve comprehension, for practicality's sake in analyzing the text, they were not counted. Proper nouns were considered to be important in the text, and were therefore included as words. Table 2 contains the general *Range* statistics for the *AFH* text:

Table 2

Count of Tokens, Types, Families for AFH Text According to Range Program

Base List	Number of tokens / % of total tokens	Number of types / % of total types	Number of Word Families
One	70,099 / 75.04%	2,605 / 24.27 %	963
Two	4,220 / 4.52 %	1,220 / 11.37 %	655
Three	6,174 / 6.61 %	1,220 / 11.37 %	501
Non-list	12,917 / 13.83 %	5,689 / 53.00 %	NA
Total	93,410	10,734	2,158

Of special note is the number (5,689) and percentage (53%) of different non-list types not found on any of the three base lists. Over half of all types fall outside the word lists, however those types constitute only 13.83% of the total tokens, suggesting that an L2 reader would encounter a large number of low frequency, and potentially unknown, words in the text, but that those words would rarely be repeated.

This basic analysis illustrates how lexically dense a college text is for L2 learners. These distribution percentages are fairly typical of an academic text, with a slightly higher than typical percentage of non-list words in the target text. This could be attributed to the fact that the text is a history book, with a high number of proper nouns in addition to other specialized terms.

Single Word and Single Sentence Modification

As mentioned earlier, there are a number of different approaches to linguistic simplification and elaboration. In light of results such as Tweissi (1998), which showed that amount and type of modification can have unexpected and varying results, it was determined to attempt to isolate the most basic effects of lexical modification. To do this, single words within single sentences were chosen as targets for modification. In this way, it was hoped that effects of simplification and elaboration would be distilled down to the most basic level. By modifying at the single-word, single-sentence level only, it was hoped that interaction effects (e.g. syntactical plus lexical modification) and more global effects (e.g. discourse-level modification) would be controlled for. This focus on single-word, sentence-level comprehension addresses a noticeable gap in the research on linguistic modifications and reading comprehension.

While vocabulary knowledge is idiosyncratic and frequency is not the only measure of a word's difficulty, choosing the most infrequently occurring words was an attempt to minimize the chance that subjects would be familiar with the target words, and so reduce the possibility of a ceiling effect. At the same time, it was thought that treating the most infrequent words would also produce the most noticeable effects on readers' perceived comprehension (Arnaud & Savignon, 1997).

Non-list Verbs

In an attempt to equalize the test items, a single part of speech was chosen for treatment. After considering several options, verbs were selected as the target for modification based on their semantic importance in a sentence and their replaceability. While all words in a sentence play a role in comprehension, verbs play an especially important role by conveying the relationships between the other constituents of a sentence. Also, many low frequency verbs have several higher frequency synonyms that can act as replacements with a minimal loss of meaning (e.g., *begin* for *embark*, *follow* for *adhere*). Additionally, the unique composition of this text, with a large number of irreplaceable proper nouns (Washington, Britain, Federalists, etc.), made the selection of verbs an even more logical choice.

Treatment Instruments

Text Marking

Initially, the entire *AFH* text was run through the Range Program, which marked all words not in the three high frequency base lists. Marking preserves the original formatting of a text, but adds <2> after words on the second base list, <3> after words on the third base list, and <!> after non-list words. Words from the first base list are left unmarked, as shown in this sample sentence from the test:

If government<2> violated<3> the terms of consent<3>, the people had the right to alter<3> or abolish<!> it.

From this example, it is apparent that *abolish* is considered a non-list word; *violated*, *consent*, and *alter* are from the third base list; *government* is from the second base list, and the rest of the words are on the first base list of the *Range* program.

Sentence Selection

To find samples of non-list verbs from throughout the text, each paragraph of the text was numbered, and then random paragraphs were selected using a random number generator. After examining the marked paragraphs, all sentences containing one non-list verb within the randomly selected paragraphs were considered for use as test items. Sentences that were very long or contained many non-list nouns were dropped. This process resulted in a list of fifty non-list verbs to be used as targets for modification.

Table 3 contains the fifty verbs selected for modification:

Table 3

Low Frequency AFH Verbs Selected for Modification

cast (out)	regroup	pertained	embarked
undercut	abolish	evade	fostered
militated	alienated	proclaiming	launched
idealized	mistrusted	affirming	attested
redraw	goaded	collude	groomed
adhere	fortified	harassed	convicted
overtook	devised	slumped	incurring
tripled	repent	sprouted	strained
allocate	undermined	mounted	slapped
condemned	termed	impeach	embittered
dissolving	betray	render	crafted
deemed	elevated	rallied	modernizing
		affixed	romanticized

In order to create test items of more uniform difficulty, sentences taken from the text were slightly modified according to the following parameters.

1. Pronouns were replaced with their referents.

Original Sentence: **They** slapped tariffs on imports and duties on exports.

Modified Sentence: **The states** applied tariffs on imports and duties on exports.

2. Interjections or parenthetical statements were deleted:

Original Sentence: The Just Society, **like its first cousin the Good Society**, seems to have sprouted among other founding principles.

Modified Sentence: The Just Society seems to have sprouted among other founding principles.

3. Complex sentences were shortened:

Original Sentence: Bills of rights, **which were very popular in the eighteenth century**, had been affixed to several state constitutions **and promulgated elsewhere as well.**

Modified Sentence: Bills of rights had been attached to several state constitutions.

In the end, fifty sentences containing one non-list verb each were used in the treatment instruments. Again, using single sentences was an attempt to measure the readers' involvement at the most basic propositional unit, and to isolate the effects of single words on the comprehension of that unit.

Verb Modifications

Once the fifty sentences had been selected, each verb was modified in one of three ways: simplification, elaboration, or no modification (control). Simplification involved replacing the low frequency, non-list verbs with higher frequency one-to-three-word equivalents. In most cases, one-word equivalents were used, but in some cases, short phrases or phrasal verbs were accepted as the most clear replacement. For example, *idealized* was replaced with *shown as perfect*. Elaboration entailed inserting a

parenthetical definition after the target verb. These definitions were also created using words from the first three base lists, with words taken as much as possible from the first two base lists, as shown below:

No Treatment: The Just Society seems to have **sprouted** among other founding principles.

Simplified Treatment: The Just Society seems to have **grown** among other founding principles.

Elaborated Treatment: The Just Society seems to have **sprouted (started to grow)** among other founding principles.

As much as possible, the simplified verbs were taken from the first base list of the *Range* Program. One exception occurred in replacing the word *condemn*. *Criticize* was accepted for use as a replacement, although it is not found on the three base lists. However, *critic* is a headword on the second base list, so *criticize* was accepted as part of that word family. For a full list of simplified, elaborated and original verbs, see Appendix A.

It should be noted that the selections of words for the simplification and elaboration treatments was done subjectively, according to the judgment of the researcher. The meaning of each verb was researched using *The American Heritage Dictionary for Learners of English*, and, in the case of elaboration, the parenthetical definitions were created with McKeown's (1993) recommendations for effective definitions in mind:

- Identify the role of the word
- Characterize the word – explain prototypical use (as opposed to an all inclusive definition)
- Make meaning accessible and straightforward
- Arrange for attention to the whole definition

Treatment Forms

Three parallel forms of the instrument were created (see Appendix B for a complete form of the instrument). Each form contained the same sentences in the same order; however, each item of the three forms received a different treatment, as shown in Table 4:

Table 4

Sample Items for Three Test Forms and Three Treatments

Form 1	Form 2	Form 3
<p><u>Simplified:</u> If James II broke his compact with the English people, they had every right to reject him.</p>	<p><u>Elaborated:</u> If James II broke his compact with the English people, they had every right to cast him out (throw or drive out; reject).</p>	<p><u>No Treatment (Control):</u> If James II broke his compact with the English people, they had every right to cast him out.</p>
<p><u>Elaborated:</u> Young people undercut (weakened; challenged) the concept of universal moral truth that the Founders had taken for granted.</p>	<p><u>No Treatment (Control):</u> Young people undercut the concept of universal moral truth that the Founders had taken for granted.</p>	<p><u>Simplified:</u> Young people challenged the concept of universal moral truth that the Founders had taken for granted.</p>

Each form of the test provided treatments of simplification, elaboration, or no treatment in roughly equal amounts. That is, of 50 items, 16 or 17 items were simplified, elaborated, or left untreated as control, as shown in Table 5:

Table 5

Number of Items with each Treatment

	Form 1	Form 2	Form 3
Simplified	16	17	16
Elaborated	17	16	17
No Treatment	17	17	17
Total	50	50	50

The treatments were ordered in a changing pattern within each form, so that a regular pattern would not be readily apparent. This was done to avoid subjects noticing that every third sentence contained a parenthetical statement, and paying closer attention to it. The forms were also staggered, so that each sentence received all three treatments, though not within the same form, as shown in Table 6:

Table 6

Example Staggering of First Six Item Treatments

Item #	Form 1	Form 2	Form 3
1	simplified	elaborated	no treatment
2	elaborated	no treatment	simplified
3	no treatment	simplified	elaborated
4	elaborated	no treatment	simplified
5	no treatment	simplified	elaborated
6	simplified	elaborated	no treatment

Perceived Comprehension

A self-reporting measure was selected to test subjects' perceived comprehension. A rating scale originally similar to Oh (2001) and adapted by Cramer (2005—see Table 7) was slightly modified and used as the rating scale for subjects to evaluate their perceived comprehension in this study (see Figure 2).

Table 7

Comprehension Self-rating Scale by Cramer, 2005

1 means that you understood NOTHING in the paragraph.

2 means that you understood VERY LITTLE in the paragraph.

3 means that you understood SOME of the paragraph.

4 means that you understood ABOUT HALF of the paragraph.

5 means that you understood ALMOST EVERYTHING in the paragraph.

6 means that you understood EVERYTHING in the paragraph

The numbering and form of the rating scale were modified for this study, and a brief set of instructions was provided for the subjects. After reading the instructions, subjects read each sentence and then circled a number that they felt corresponded to the amount of each sentence that they understood. Figure 2 shows the directions, first three test items and rating scale that the subjects received:

Figure 2:

*Sample of Form 1 Treatment Instrument***Form 1****Directions: Do not put your name anywhere on this test.**

Read each numbered item. After you have finished reading, circle the number that best describes how much information you understood:

- 0 Nothing
- 1 Very little
- 2 Some
- 3 About half
- 4 Almost everything
- 5 Everything

When you are finished, raise your hand.

	Nothing	Very little	Some	About half	Almost everything	Everything
1. If James II broke his compact with the English people, they had every right to reject him.	0	1	2	3	4	5
2. Young people undercut (weakened; challenged) the concept of universal moral truth that the Founders had taken for granted.	0	1	2	3	4	5
3. Young people militated against the Judeo-Christian understanding of the world that had existed at the time of the Founding.	0	1	2	3	4	5

Procedure

Teachers at the ELC or BYU agreed to allow the administration of the instrument during class time. Each subject received only one form of the instrument to complete. The instrument was administered by classroom teachers and the researcher. The three forms were randomly staggered among the students, so that roughly equal amounts of each form were distributed in each class. Form 1 was distributed to more students inadvertently, so the distribution of the forms is slightly unbalanced. Table 8 shows the

number of forms received by subjects at the ELC (lower proficiency) and BYU (higher proficiency).

Table 8

Number of Subjects Receiving Test Form 1, 2, and 3

Form	ELC (Lower)	BYU (Higher)	Total
1	19	12	31
2	12	11	23
3	11	13	24
Total	42	36	78

Subjects were given the tests, and the following directions, which were printed at the beginning of the test, were read aloud:

Do not put your name anywhere on this test. Read each numbered item. After you have finished reading, circle the number that best describes how much information you understood:

- 0 Nothing
- 1 Very little
- 2 Some
- 3 About half
- 4 Almost everything
- 5 Everything

When you are finished, raise your hand.

Because the instruments were administered during classes, subjects were generally limited to approximately 45 minutes to complete the instrument. In general, subjects completed the instrument within 30 minutes, and every subject completed the full instrument. Subjects read each item and circled a number on the six point (0-5) Likert scale to indicate how well they believed they understood the sentence. At the end of the

test, subjects completed a short, anonymous questionnaire about native language, TOEFL score, and previous exposure to the *AFH* text.

Scoring

The subjects' numerical ratings of all 50 sentences were entered into a Microsoft Excel spreadsheet by the researcher. An analysis of variance, using the Statistical Analysis System (SAS), was performed to determine the effects on perceived comprehension ratings for treatment, skill level, and the interaction between proficiency level and treatment.

CHAPTER FOUR

Results and Discussion

The purpose of this study was to measure effects of two types of lexical treatment (simplification and elaboration) on the perceived comprehension of ESL readers at a sentence level. The following research questions guided the formation and administration of the study instrument:

Is ESL readers' perceived comprehension of expository sentences affected by:

- a) Vocabulary modifications (simplification vs. elaboration)?
- b) General proficiency level (as measured by TOEFL benchmark scores)?
- c) The interaction of vocabulary modification and proficiency level?

The study was conducted using 78 subjects divided into lower and higher proficiency levels. Subjects rated their own comprehension of sentences containing one verb that had received either simplification, elaboration, or no treatment. Because subjects received all treatments, they acted as their own control. Each instrument contained roughly even amounts of each treatment type, and an analysis of variance (ANOVA) was performed to interpret the results.

Lexical Simplification and Elaboration

The primary research question focused on comparing the effect of two types of lexical modification: simplification and elaboration. Lexical simplification entailed replacing one low frequency verb with a more frequently occurring synonym. For example, the word *dissolving* was replaced with *ending*. Elaboration consisted of leaving the low frequency verb in the sentence, but adding a parenthetical definition immediately after it. For example, the word *dissolving* was followed by the phrase (*bringing an end*

to). The definitions were composed of words that are more frequently occurring than the target verb. Nearly equal numbers of sentences received the simplification, elaboration and no treatment in each form of the research instrument. Subjects then rated their own comprehension of each sentence as they read it. They circled a number from zero to five to indicate how much of each sentence they felt they understood. Zero indicated that a subject felt they understood none of the information in the sentence, while a five indicated that a subject felt they understood all of the information in the sentence.

Primary Findings

The Statistical Analysis System (SAS) program was used to perform an analysis of variance (ANOVA) of the results. Table 9 shows the mean comprehension ratings for the different treatment types.

Table 9

Mean Ratings for Treatment Types

Treatment	Mean Rating (0-5 Scale)	Standard Error
Elaboration	3.81	0.109
Simplification	3.85	0.108
No Treatment	3.70	0.110

The ANOVA indicated no statistically significant difference ($p = .5962$) between the mean comprehension rating of elaborated items, simplified items, or items left unmodified (control). However, several interesting trends appear in the mean ratings. First, the simplified items received the highest mean rating (3.85), closely followed by the mean rating of elaborated items (3.81). Items that received no treatment received the lowest mean comprehension score (3.70). The difference between the mean rating of

simplified items and the mean rating of untreated items is 0.15, which indicates some positive trend on comprehension for simplification, even though more definitive claims are not possible.

Table 10 shows the mean ratings by low and high proficiency levels. The lower proficiency level had a higher mean rating (3.89) than the higher proficiency level (3.68),

Table 10

Mean Ratings for Proficiency Levels

Proficiency Level	Mean Rating (0-5 Scale)	Standard Error
Low (N = 42)	3.89	0.086
High (N = 36)	3.68	0.092

suggesting that the lower level students may have rated their comprehension higher than the higher proficiency students (by .21). However, there was no statistical significance for proficiency level ($p = .0944$), nor was there an effect for the interaction of treatment and proficiencies ($p = .9297$). Table 11 summarizes the results of the ANOVA.

Table 11

F Value and Pr > F for Treatment Type and Proficiency Level

	<i>df</i>	Type III SS	<i>MS</i>	<i>F</i>	<i>p</i>
Treatment Type	2	.9087	.4544	.52	.5962
Proficiency Level	1	2.4731	2.4731	2.82	.0944
Treatment * Proficiency Level	2	.1289	.0645	.07	.9297

Discussion and Extension of Findings

In summary, results of the ANOVA indicate no effect on perceived comprehension by either simplifying or elaborating single words in a sentence. This was

true regardless of the learner's skill level. However, examination of the instrument used in the study, as well as subject variables, may provide some insight into the constructs of simplification, elaboration and comprehension as well as the ways they are measured. This section will discuss the different instrument, researcher and subject variables of this study, and how these variables apply to the findings of previous studies of simplification, elaboration and comprehension.

Instrument Variables: Word Selection

First, the test was constructed with heavy reliance on Nation's *Range* program, with the assumption that verbs marked as low frequency by the program would likely not have been encountered, or, at the very least, would not have been mastered by the language learners taking the test. The low frequency verbs were anticipated to have produced a more noticeable effect by which to judge the relationship between simplification, elaboration and perceived reader comprehension.

The *Range* instruction file describes how West's 1953 General Service List and Coxhead's 1998/2000 Academic Word List comprise the highest frequency words, and that words not contained on those two lists are considered low frequency (Heatley et al., 2002). These frequency lists have been widely used and have provided a much needed framework for the analysis of vocabulary frequency (Laufer, 1997). However, it is possible that relying solely on these lists to measure the assumed difficulty of the words on the instrument may have created a false profile of the actual difficulty. In fact, the idea that a word's relative frequency in the language is indicative of the word's actual difficulty for a language learner continues to be investigated, especially given the fact that high frequency forms tend to be the most polysemous (Ravin & Leacock, 2000).

While intuitively appealing, it is still not a given that the lowest general frequency verbs, as measured by the program, are indeed the most difficult for L2 learners. With that uncertainty, it follows that modifying the lowest frequency verbs may not necessarily produce a noticeable effect on the L2 readers' perceived comprehension.

In addition to low frequency verbs, low frequency nouns were initially considered a feature of interest in the creation of the instrument. However, the difficulty of replacing low frequency nouns, especially proper nouns, led to the inclusion of many low frequency nouns in the sentences. It is possible that the inclusion of low frequency nouns could have overridden effects caused by modifications of certain verbs.

In short, research on the effects of text simplification depends greatly on assumptions of word difficulty. While word frequency is used ubiquitously in the research, and rightfully so, as many pedagogically useful practices have been established as a result of such research, the results of this study suggest that L2 learners' sentence-level comprehension may be a more complex process than simply modifying a key lower frequency word in a sentence.

Sentence Level Comprehension

Similar to the word-level concerns above, using sentences with no discourse level connection could have influenced the outcome of the study as well. This design change was an intentional departure from the majority of previous research. The testing sentences were deliberately disconnected from each other in an attempt to isolate the effects of the lexical modifications at the sentence level. Intuitively, this should have favored comprehension of the modified sentences (simplified or elaborated verbs) over the control sentences if a single word replacement was having an effect on learners'

comprehension, because global context clues (paragraph level) were not available. As Laufer (1997), points out, “looking for contextual clues for [an] unknown word will not help if the clues are not there to be exploited” (p. 28). The organization of the test forced the L2 readers to restart the reading process completely with each of the fifty items. The jump from topic to topic should therefore have caused more problems with the comprehension of the control sentences containing lower frequency verbs. The fact that this did not happen is further evidence of a more complex issue—in other words, that sentence level modifications alone may not provide a sufficiently large context for effects to become apparent.

Most other studies of simplification and elaboration have used much larger texts to measure effects of modification (e.g., Oh, 2001; Tweissi, 1998; Young, 1999). In short, while the local level context was a distinguishing characteristic of this study, it may have also limited the measurability of the effects of the treatments. This raises the question of the possibility of separating interactions between text characteristics and modifications. In this study, the aim of using such a limited scope to present the modifications was to isolate the effects of the lexical modification, and prevent interaction with effects of other features in a paragraph or longer discourse. The lack of significant effects raises the possibility that the effect of lexical modifications may be somewhat cumulative in nature, and may require a larger context than a single sentence to be effective. Therefore, studies that compare combinations of modifications with a single type of modification (e.g., Tweissi, 1998) may be of greater worth and might be examined more closely and replicated based on the results here.

Comprehension Scale

The characteristics of the rating scale may have also affected subjects' choices. Subjects were given written instructions to circle the number that best described how much they understood. No definition for *understanding* was provided. The scale benchmarks were not detailed, so subtle differences in comprehension may have been lost in the grey areas between understanding "some" and "very little" for example. In other words, the basic categories used on the instrument scale may have caused too much ambiguity for L2 learners to consistently rate themselves from item to item.

Additionally, some subjects may have set a mental standard for understanding "about half" that was actually less than half, and then rated themselves higher overall for the duration of the test. It is very possible that the use of an ordinal scale introduced greater variability in the subjects' interpretations of each benchmark as well as the distance between each rating. Finally, the fact that the test was the subjects' first experience with the task of reading a sentence and using this particular scale may have affected both the reliability and validity of the self-assessment in this case (Ross, 1998).

Learner Variables: Self-assessment

Considering the results of the self-assessment of comprehension, it becomes apparent that the nature of this type of measurement may also have created some loopholes in measuring perceived comprehension. Self evaluation is a subjective measure that adapts to the proficiency level of the test taker, because a well-constructed self evaluation instrument allows a learner to use the language skills they already have to produce their evaluation (Ross, 1998). This is in contrast to many traditional instruments

that require a learner to negotiate a certain level of language in order to demonstrate some kind of understanding or skill. In this study, the use of a numerical scale with simple word descriptions was intended to allow subjects of lower proficiency to concentrate more on actually understanding the sentences than on understanding the meaning of the comprehension questions themselves. However the findings of this study give support to a skill level variable in self assessment—namely, that teachers’ experience and research findings have shown that learners of lower actual proficiency often overrate their overall linguistic ability. Conversely, learners of higher actual proficiency will underrate their ability (Blanche & Merino, 1989; Ross, 1998). This may have been the case in this study, as the lower level subjects rated their understanding slightly higher than higher level subjects. Despite the risks of using self-assessment, the nature of the study seemed to lend itself to the use of such an instrument. Isolating sentence level comprehension of sentences was one of the aims of the study, and it was thought that self-assessment would minimize interference that might come from other types of assessment tools used, such as multiple choice.

Ceiling Effect

A final possibility to explain the relatively high mean comprehension ratings (3.89 and 3.68 on a 5 point maximum scale) is that of ceiling effects. The subjects designated as lower proficiency may have been too high a starting point. If the subjects did indeed understand most of the sentences and most of the vocabulary in the first place, then there would be no noticeable difference in the effects of the simplification and elaboration treatments.

Summary

The results of the study do not provide a clear indication of any significant effect of single word modification on L2 reader comprehension of single English sentences taken from a college-level text. This finding suggests caution in interpreting the findings and claims of other modification research. Issues such as dependence on frequency lists, interaction between proficiency level and modification type, isolating the effects of different text features on comprehension, and types of comprehension measures might all be applied to the interpretation of the results of previous studies. These same issues might also be applied to future studies of text modification.

As the measurement of these effects becomes more uniform, a more complete understanding can be expected, and that understanding can more easily be applied the development of effective L2 reading materials and practices. It seems crucial, for instance, that variables should become more precisely defined and more carefully considered before research findings on modification are composed and employed in designing pedagogical materials.

CHAPTER FIVE

Conclusions and Recommendations

Review

This study was an attempt to isolate and interpret the effects of vocabulary simplification and modification on sentence-level perceived comprehension. The research questions that guided the formation and application of the research instrument were:

Is ESL readers' perceived comprehension of expository sentences affected by:

- a) Vocabulary modifications (simplification vs. elaboration)?
- b) General proficiency level (as measured by TOEFL benchmark scores)?
- c) The interaction of vocabulary modification and proficiency level?

These questions arose from research into the areas of text modification and its potential effects on L2 reading comprehension. The research surveyed indicated a high level of variability in the combinations of simplification approaches. Many studies mixed aspects of lexical, syntactic and discourse modifications (Leow, 1993; Oh, 2001; Yano et al., 1994). Other studies focused on just one area of modification, but the proficiency level of learners was varied, as well as the types of instruments used to measure the effects of the modifications (Blau, 1982; Leow, 1997; Young, 1999). The results from all these studies produced a range of results for modification, some positive and some negative. The apparent lack of transferability of results led to the test design of this study. The design was an attempt to form a baseline understanding by applying modification at the basic lexical level and measuring the effect on perceived comprehension at the syntactic level only. This study also introduced the idea of lexical elaboration, in the form of parenthetical definitions following low-frequency vocabulary.

The test instrument used self evaluation of comprehension as the primary comprehension measure. The results of the test showed no significant difference between comprehension ratings for items that had been simplified, elaborated, or left in the original form.

Limitations

The limitations of this study have been discussed in detail. In summary, limitations have been divided into two main categories: instrument variables and learner variables. Instrument variables include the way that target words were selected for use in the test, the lack of connection between sentence items, the self-comprehension rating scale used, and the wording of the instructions given to subjects.

Learner variables centered on the use of a self-assessment tool. This tool may have left room for different interpretation of the construct of understanding. Additionally, subjects' proficiency level may have created a ceiling effect in the results.

In reviewing the data, it is also possible that two additional factors may have played a role in the outcome of the study. First, the group of target verbs that were modified included a number of cognates with Spanish. Many of the subjects participating in the study were Spanish speakers, and so may have found the verbs easier to understand. Additionally, the phrasal verbs were sometimes used as replacements for the target verbs. The individual components of the phrasal verbs (the verb and the particle) were found on the higher frequency lists. However, the meaning of an entire phrasal verb often differs from the meaning of the base verb alone. Thus, the phrasal verbs used as replacements for the off-list verbs may not have been any more familiar to the subjects than the original verbs, and thus may have affected the comprehension ratings.

Further Research

The findings of the study offer several fruitful avenues for future research:

1. A structured approach to text simplification and the measurements used to test it. While the limited scope of sentences used as context for the test may have interfered with the measurement of the lexical treatments, establishing a minimum benchmark for the effects of modification may still be possible. Isolating the effects of individual modifications and understanding the interactions between treatments and readers' proficiencies could enable readers to more effectively use modified materials in the future.
2. Further exploration of lexical simplification and elaboration. While research in lexical simplification is becoming more established and many lexically simplified materials exist, the possible benefits of lexical elaboration have largely been ignored. This follows the previous point of thorough exploration of individual modifications and their combinations. Understanding how learners process lexical elaboration might provide useful insight into the use of this tool in the future.
3. Re-evaluation of frequency lists as a measure of lexical difficulty. The use of frequency lists is an invaluable tool in organizing corpora and evaluating different registers of language. However, dependence on such lists should be carefully considered. Lists should be evaluated for relevance (actual occurrence in current language), polysemy, and other measures. While this is a daunting task, it may be a necessary prerequisite before confidence can be obtained in using the lists to define relative text difficulty. A standard

measurement for frequency and difficulty for vocabulary might then be established, and then be extended to text modification.

4. Exploration of the validity of self-assessment of reading comprehension and vocabulary knowledge. The merit of self-assessment will likely continue to be debated. The ongoing application of self-assessment to vocabulary and reading research, coupled with more objective measures, will enable researchers to more clearly determine areas that may be effectively measured with self-assessment.

Conclusion

While the results of this study did not show a significant difference in the effects of the treatments presented, they do shed important light on future exploration of the effects of vocabulary simplification and elaboration. Because many L2 readers will likely continue to struggle to navigate native English texts effectively, researchers should continue to explore the effects of text characteristics and modifications with the hope that a more consistent approach for dealing with this issue can evolve.

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APPENDIX A

Target Verb List

	Original	Simplified	Elaborated
1	cast out	reject	throw or drive out; reject
2	undercut	challenged	weakened; challenged
3	militated	worked against	organized; worked against
4	idealized	seen as perfect	shown as perfect
5	re-draw	revise	draw again; revise
6	adhere	follow	remain faithful to; follow
7	overtook	came over	came over suddenly
8	tripled	multiplied	increased three times; multiplied
9	allocate	distribute	set aside; distribute
10	condemned	criticized	expressed disapproval of
11	dissolving	ending	bringing an end to
12	deemed	judged	considered to be; judged
13	regroup	prepare	organize again; prepare
14	abolish	end	completely end
15	alienated	drove away	drove away
16	mistrusted	doubted	had no confidence in; doubted
17	goaded	annoyed	annoyed; caused to act
18	fortified	strengthened	made stronger; safer
19	devised	invented	thought of; invented
20	repent	change	feel regret about; change
21	undermined	weakened	damaged; weakened
22	termed	called	gave the name; called
23	betray	lie to	lie to
24	elevated	raised	raised; lifted up
25	pertained (to)	related to	had a connection; related
26	evade	avoid	escape; avoid
27	declaring	proclaiming	declaring publicly
28	affirming	declaring	declaring; saying firmly
29	collude	work together	work secretly; scheme
30	harassed	disturbed	disturbed repeatedly
31	slumped	decreased	fallen; decreased
32	sprouted	grown	started to grow
33	mounted	organized	planned and started; organized
34	impeach	accuse	charge with an offense; accuse
35	render	make	transform; make
36	rallied	united	brought together; united
37	affixed	attached	added; attached
38	embarked (on)	began	set out; began
39	fostered	encouraged	helped to grow; encouraged

40	launched	started	began working on; started
41	attested (to)	confirmed	gave evidence; confirmed
42	groomed	cleaned	cared for their appearance
43	convicted	judged guilty	judged guilty
44	incurring	acquiring	becoming responsible for; acquiring
45	strained	tested	tested; pushed to the limit
46	slapped (on)	applied	imposed; applied
47	embittered	angered	caused to feel bad; angered
48	crafted	created	carefully made; created
49	modernizing	revising	making more current; revising
50	romanticized	shown as ideal	shown as ideal

APPENDIX B

Test Form 1

Directions: Do not put your name anywhere on this test.

Read each numbered item. After you have finished reading, circle the number that best describes how much information you understood:

6 Nothing

7 Very little

8 Some

9 About half

10 Almost everything

11 Everything

When you are finished, raise your hand.

	Nothing	Very little	Some	About half	Almost everything	Everything
1. If James II broke his compact with the English people, they had every right to reject him.	0	1	2	3	4	5
2. Young people undercut (weakened; challenged) the concept of universal moral truth that the Founders had taken for granted.	0	1	2	3	4	5
3. Young people militated against the Judeo-Christian understanding of the world that had existed at the time of the Founding.	0	1	2	3	4	5
4. Virtue was idealized (shown as perfect) in American books and movies.	0	1	2	3	4	5
5. A census is taken every ten years to determine the changes in population and re-draw the boundaries of the House districts to reflect population change.	0	1	2	3	4	5
6. Is there really such a thing as moral truth, something to which all polities must follow?	0	1	2	3	4	5
7. Change overtook the market system too.	0	1	2	3	4	5
8. In the course of the struggle the federal government multiplied in size and came to exercise powers beyond the Founders' imagination.	0	1	2	3	4	5
9. Smith used his description of a market economy and its ability to allocate (set aside; distribute) resources efficiently to criticize the mercantilist wisdom of the day.	0	1	2	3	4	5
10. John Wesley criticized the slave trade and preached against slavery.	0	1	2	3	4	5

	Nothing	Very little	Some	About half	Almost everything	Everything
11. Some abolitionist leaders considered dissolving (bringing an end to) the union of states to be free of the stain of slavery.	0	1	2	3	4	5
12. Each branch of Congress is the judge of the qualifications of its members and may refuse to admit or remove a member deemed unworthy to be a representative or senator.	0	1	2	3	4	5
13. The small states asked for time to regroup (organize again; prepare) and come up with a plan of their own.	0	1	2	3	4	5
14. If government violated the terms of consent, the people had the right to alter or abolish it.	0	1	2	3	4	5
15. Every mistake they made drove the Americans away all the more - driving the undecided toward the patriot cause.	0	1	2	3	4	5
16. Adam Smith mistrusted the power of large organizations.	0	1	2	3	4	5
17. Adams demonstrated in court that the soldiers had fired into the crowd only after being annoyed beyond human endurance.	0	1	2	3	4	5
18. If the British dug in and fortified (made stronger; safer) and area, the enemy would operate with impunity all around them.	0	1	2	3	4	5
19. We have invented clever ways of getting around generality.	0	1	2	3	4	5
20. Abolitionists concentrated on the immorality of slavery and urged Southern slave owners to repent (feel regret about; change) and free their slaves.	0	1	2	3	4	5
21. Recent developments had undermined Americans' confidence.	0	1	2	3	4	5
22. The U.S. conquered the world in a different way as well, one that an observer termed (gave the name; called) "Coca-colanization".	0	1	2	3	4	5

	Nothing	Very little	Some	About half	Almost everything	Everything
23. The cumulative effect was to isolate, offend, or betray the very people the British were trying to win over.	0	1	2	3	4	5
24. What followed was image-engineering raised to high art.	0	1	2	3	4	5
25. The framers simply didn't believe that the idea pertained to republican government.	0	1	2	3	4	5
26. The young found it easier to avoid draft laws, traffic laws, and a host of other ordinances.	0	1	2	3	4	5
27. Periodic waves of "nativism" broke out, subjecting the new arrivals to various forms of persecution and proclaiming (declaring publicly) that America was for Americans.	0	1	2	3	4	5
28. Declaring rights was one thing, actually protecting them quite another.	0	1	2	3	4	5
29. All major industries would be allowed to collude (work secretly; scheme) together, not in a spirit of self-interest but of public benefit.	0	1	2	3	4	5
30. Neutrals were harassed by both sides until it became more difficult to walk down the middle than to throw in with one group of partisans or the other.	0	1	2	3	4	5
31. By 1932 automobile production had slumped (fallen; decreased) from its 1929 level of 4.5 million units to a scant 1.1 million.	0	1	2	3	4	5
32. The Just Society seems to have sprouted among other founding principles.	0	1	2	3	4	5
33. It is no mere happenstance that the first assault organized against the Founding came at the hands of Progressive historians.	0	1	2	3	4	5
34. The House of Representatives also has the power to impeach the president or any federal judge.	0	1	2	3	4	5

	Nothing	Very little	Some	About half	Almost everything	Everything
35. Madison's plan would make the threat into a working tyranny.	0	1	2	3	4	5
36. Randolph rallied (brought together; united) the flagging Federalists and took command - giving the political performance of his life.	0	1	2	3	4	5
37. Bills of rights had been attached to several state constitutions.	0	1	2	3	4	5
38. Beginning roughly at the time of the American Revolution and the ratification of the Constitution, the U.S. economy embarked (set out; began) on a long period of growth.	0	1	2	3	4	5
39. Trade with other countries was good and should be fostered just as trade among farmers and shopkeepers was of value.	0	1	2	3	4	5
40. The British government launched (began working on; started) a determined effort to tighten colonial administration.	0	1	2	3	4	5
41. The very fact that Puritans had come together attested to their cosmic importance.	0	1	2	3	4	5
42. The young dressed outrageously, cleaned experimentally, and adopted manners that were calculated to offend.	0	1	2	3	4	5
43. If convicted, the official is removed from office.	0	1	2	3	4	5
44. How could they gain the benefits of republican life without acquiring its dreadful cost?	0	1	2	3	4	5
45. The American sense of oneness was severely strained (tested; pushed to the limit) by the "swarming horde of foreigners" many of them with marked religious and cultural differences.	0	1	2	3	4	5
46. The states applied tariffs on imports and duties on exports.	0	1	2	3	4	5

47. If they were lenient with rebel sympathizers, the British embittered (caused to feel bad; angered the loyalists). 0 1 2 3 4 5

48. The structures and devices so brilliantly crafted in the Founding failed the country in the reluctant march to the Civil War. 0 1 2 3 4 5

49. The American Founders did their modernizing (making more current; revising) in a moderate way. 0 1 2 3 4 5

50. Smallness and individuality were romanticized by American transcendentalists like Ralph Waldo Emerson and Henry David Thoreau. 0 1 2 3 4 5

Directions:**Go back and circle the words that you did not know.**

When you are finished, please answer the questions on this sheet. Do **not** put your name anywhere on the paper.

Native language: _____

Age: _____ Male or female: _____

Have you taken the TOEFL? _____ What was your score? _____

If you are enrolled at the English Language Center (ELC), what level are you? _____

Are you enrolled at BYU? _____ Have you taken American Heritage 100? _____

Have you read the book *America's Founding Heritage*? _____

Comments about the test?