The Effects of the Amount and Type of Simplification on Foreign Language Reading Comprehension

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In its written and spoken forms, language simplification has been found to facilitate comprehension by language learners. This study investigated whether variations in linguistic simplification, in terms of amount and/or type, entail differences in the level of message comprehensibility. The subjects of this study consisted of 200 Omani male and female learners of English. They were divided into five equal groups instructed to read five different versions of a reading text, and asked to answer a 25-item multiple-choice achievement test. The results showed that (a) simplification (in general) has a positive effect on reading comprehension; (b) type of simplification, rather than its amount, is what counts for the positive effect; (c) too much simplification (in amount, type, or both) may not necessarily lead to a better influence on reading comprehension; and (d) lexically simplified texts may produce readers who will score higher than readers of other types of texts: authentic, syntactically simplified, fully simplified, etc. Indications for FL material writers, teachers, and future research are included.

INTRODUCTION

It is well-established in the literature on second language acquisition (SLA) that comprehension of a message by the language learner is an essential condition in the acquisition process. That is, “input” in SLA has to be comprehensible for acquisition to take place (Krashen, 1980). In addition, many researchers in SLA believe that the cognitive processes involved in language acquisition are simplicity oriented. One manifestation of simplification is making the confusing variety of linguistic data more manageable to the language learner by fitting it into a framework of categories and rules that the learner already possesses or has already formulated (Ellis, 1985; Littlewood, 1984; Richards, 1975; Widdowson, 1975).

But, what makes input comprehensible? It is widely assumed that input becomes comprehensible to SL learners through the simplifications (or modifications) made in native speech or authentic writing. One of the registers that have been investigated for simplification in native speech is “foreigner talk” (speech of native speakers of a language to non-native speakers). Long (1983, p. 126) considers foreigner talk a source of comprehensible input to the language learner. He found it to be characterised by linguistic and interactional modifications that supposedly lead to better comprehension on the side of the learner. Examples of these modifications are: slower rate of speech delivery, word paraphrasing, use of a fewer number of S-nodes 1 per sentence/utterance, etc. Snow and Hoefnagel-Hohle (1982) analysed

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1 S-nodes refer to the units of speech that are basic to language learning.
the speech addressed to English-speaking children aged 3 to 18 years old by their Dutch classmates and by their teachers, with respect to its simplicity and relation to SLA. One of their results showed that the amount of comprehensible speech, measured by the number of utterances which are remarkably short in terms of the mean length of utterance in words, was the most important factor in predicting test scores after four or five months of language development. Long (1985) investigated the effects of global simplified input on non-native speakers’ comprehension of a message using two proportionally identical versions of a lecture: one containing unadjusted English native speech, and the other, adjusted speech in terms of slower rate of delivery and less complex syntax. His results showed that comprehension of a lecture, measured by scores on a multiple-choice test about the lecture’s content, was significantly higher among non-native speakers who heard the adjusted version than those who heard the unadjusted one. A similar result was obtained for perceived comprehension, as expressed by self-reports from the same subjects. Tweissi (1990) found that native speakers of Arabic made simplifications similar to those made by native speakers of other languages when talking to their non-native interlocutors, and that the native speakers adopted the simplifications on the assumption that they might facilitate the comprehension task.

In its written form, language simplification has also been found to facilitate comprehension by language learners. Kameenui, Carine, and Freschi (1982); Freebody and Anderson (1983); and Mitchell, Ames, and Bradley (1984) have revealed that lexical simplification facilitates students’ reading comprehension. Coleman (1962) studied the effect of shortening sentences on improving reading comprehension. It was found that the texts that were modified (to include short sentences) were more comprehensible than the authentic ones, which contained significantly longer sentences. Chen (1991) dealt with organisational and syntactic simplification features (using reading passages with ordinary sentence orders versus others with scrambled orders) and asserted the positive effects of these features on his Chinese subjects’ reading abilities. In particular, the subjects’ information recall abilities were affected significantly in favor of syntactic simplification. Ali (1994) investigated the influence of lexical and syntactic simplifications on the comprehensibility of English texts by 12th-grade female Jordanian students and found that there were statistically significant differences in the achievement mean scores between the group that read the original text and the one that read a lexically and syntactically simplified text, in favor of the second group. However, Blau (1982) studied the effect of syntactic modification on ESL students’ reading comprehension ability. Three versions of a text were used: one of short and simple sentences, a second of complex sentences but with cues to surface underlying relationships, and a third with complex sentences. The results showed that readers of the second version (rather than the first) scored highest among the three groups.

In summation, to answer the question, “What makes input comprehensible?”, one can say that findings of some empirical research have provided substantiation to the assumption that at least certain modifications can be made in native speech or authentic writing at all linguistic levels to render a message (or input) more comprehensible to the language learner. This, however, does not rule out a possible negative role of simplification on the overall outcome of comprehension and SL acquisition due to rendering certain linguistic aspects of the text inadequate for a given information load, or depriving learners from being exposed to authentic language (cf. Honeyfield, 1977; Campbell, 1987).

Furthermore, a number of studies have revealed that simplifications are variable in the sense that they are sensitive to the listener’s L2 proficiency. For example, Gass and Varonis (1985) found that for the variables negotiation of meaning, quantity of speech, scope of repair, elaboration, and transparency, there were differences among conversations directed by NSs of English to NNSs as a function of the NNS’s L2 proficiency. That is, the lower the level of proficiency, the more use of each of these variables there was. Tweissi (1986) showed that the rate of speech delivery by NSs of English varies according to the NNS’s proficiency in L2: the lower the NNS’s L2 proficiency, the slower the rate of speech. Tweissi (1987 and 1990) also showed that NSs of Arabic use quantitatively more simplifications (measured by ten linguistic and interactional features) when talking to low-level L2 learners of Arabic than to high-level ones.

The effect of variation in simplification in terms of linguistic (i.e., syntactic and lexical) modification versus elaborative (i.e., conversational) modification on the level of FL reading comprehension has been the focus of more recent research in the field. Parker and Chaudron (1987) found no significant differences between the reading comprehension level of a group of university ESL students who read a linguistically simplified passage and that of a similar group who read an elaborately simplified version of the same text. Yano, Long, and Ross (1994) presented 13 reading passages to 483 Japanese college students in one of three forms: native baseline, simplified, or elaborated. The subjects’ comprehension of the three passages was assessed by 30 multiple-choice test items requiring extraction of explicitly stated factual information, synthesizing a number of different sentences or paragraphs, or inferring about the implications of the text (i.e., deduction based on the reader’s understanding of meanings conveyed across sentences throughout the passage). Their results showed that, in general, linguistic simplification is superior when only explicit information is required, while elaborative simplification is essential in answering inference questions.

A question still remains whether variations in linguistic simplification in terms of amount and/or type entail differences in the level of message comprehensibility.
This requires investigating the effects of such variations on the level of language comprehension, which is the aim of this study.

**THE STUDY**

This study specifically analyses the differences in the levels of comprehending (English) reading texts according to the amount and type of language simplification features involved in such texts. It tests a central hypothesis (based on a general intuition) that the simpler the text, the more comprehensible it becomes to L2 learners.

**SUBJECTS**

The subjects for this study consisted of 200 Omani male and female students, ages 18-19, who were enrolled in a General National Vocational Qualifications (GNVQ) foundation program at Muscat Technical Industrial College (MTIC), Oman. They were all categorised at the beginning of the third term of the academic year 1994/1995 in the Intermediate level of English as a FL based on their results in a placement test developed by the Manchester College of Arts and derived from the (British) IELTS standards. Following Harrison (1984), the reading proficiency level of the subjects ranged between 40% and 60% on the reading part of the placement tests. The foundation program aims at developing the students' English language proficiency in order to prepare them for a two-year schooling program in an area of specialisation using English as a medium of instruction. The educational system at the MTIC allows for mixed male and female grouping of students.

The subjects were randomly divided into five equal groups (40 in each). The members of each of the five groups were instructed to read one of five versions of a text, as explained below. All groups, however, were asked to answer the same multiple-choice achievement test comprised of 25 items, with the text in front of them while answering the questions. The one hour test was administered by the teachers of the Reading Course at MTIC for all subjects in one session. The time allocated for the test had been determined to be reasonable by the teachers.

**METHOD**

Five versions of a reading passage entitled, “Pilots - A Special Position?”, were used to assess the differences in the levels of comprehension according to variation in simplification. The authentic version (Version I) occurred in Harmer (1988) and was used by Ali (1994) for purposes different from those of this study. The other four versions of the text received varying degrees and types of simplification according to the simplification criteria cited above. The second version received the highest degree of simplification in terms of the number of parts modified and linguistic levels involved: lexical and syntactic. Specifically, 46 lexical items, vocabulary expressions, or syntactic structures of the authentic text were modified by using (supposedly) simpler alternatives, such as paraphrasing, synonyms, more commonly used expressions, sentence connectives, shorter sentences, transparent structures, etc. This will be referred to as the fully simplified version or version II. The third version contained half the amount of simplifications made in the fully-simplified version, but at the same linguistic levels. This will be called the semi-simplified version or version III. The fourth and fifth versions also contained half of the simplifications but in terms of types of features. That is, one of them received simplifications at the lexical level, and the other at the syntactic level (hereafter lexically simplified or version IV and syntactically simplified or version V, respectively). Table 1 depicts these texts.

<table>
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<tr>
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<tbody>
<tr>
<td>No simplifications involved</td>
<td>Most parts simplified at lexical and syntactic levels</td>
<td>Half the amount of parts simplified at lexical and syntactic levels</td>
<td>Received simplifications at the lexical level only</td>
<td>Received simplifications at the syntactic level only</td>
</tr>
</tbody>
</table>

Table 1: A Summary of the Reading Texts Used

The lexical and syntactic features of the authentic text were modified on the basis of the results of previous research that investigated the simplifications involved in native speech or writing under simplification-triggering situations, such as talking or writing to NNSs of a language, learners of a language, children, etc. (cf. Larsen-Freeman & Long, 1991; Tweissi, 1987 and 1990 for extensive reviews of such research).

An example of a lexical simplification can be seen by comparing sentences (1) and (2), taken from the authentic and lexically simplified texts, respectively:

(1) Both in the case of the Jumbo and the Concorde, the airlines and the pilots eventually reached an agreement, but in the future pilots will no doubt continue to press for more money every time the airlines introduce a new aircraft.

(2) Both in the case of the Jumbo and the Concorde, the airlines and the pilots at last reached an agreement, but in the future pilots will no doubt continue to ask repeatedly for more money every time the airlines introduce a new plane.

The lexical items “eventually”, “to press”, and “aircraft” in sentence (1) are replaced by more commonly used or familiar items (“at last” and “plane”) or a paraphrase (“to ask repeatedly”) in sentence 2. The use of such lexical modifications is considered of a simplifying nature in the related literature (cf. Brown, 1987).
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2. Does the difference in the amount of simplification result in differences in the levels of reading comprehension?

3. Does the difference in the type of language simplification result in differences in the levels of reading comprehension, and in what way?

4. Which of the amounts and types of simplification are superior (i.e., more influential) in producing higher levels of reading comprehension?

STATISTICAL ANALYSIS

As the study attempted to investigate the influence of one independent variable with five levels (the language of the text) on one dependent variable (level of comprehension), the One-Way Analysis of Variance (ANOVA) was used to test the null hypothesis about the effect of simplification (in general) on reading comprehension (the first research question). Because the null hypothesis had been rejected by the results of the ANOVA, two other statistical procedures were applied to answer the other research questions: a Post-hoc analysis using the Tukey’s pairwise comparisons, and a Multiple Regression Analysis. The Tukey Post-hoc Analysis was used to answer the second and third research questions about the existence of any significant difference regarding the influence of the amount or type of simplification on the level of reading comprehension. The Alpha was set at 0.05 for this test. The Multiple Regression Analysis was used to answer the fourth research question. It specifically showed predictive relationships among the effects of the five versions of text on the performance of readers by predicting scores based on these versions. Thus, the version for which the highest score could be predicted would be considered the superior one, in effect, on reading comprehension. Finally, all statistical tests were performed on MINITAB version 10.0.

DATA ANALYSIS AND RESULTS

<table>
<thead>
<tr>
<th>Texts</th>
<th>n</th>
<th>X</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>Authentic (Ver. I)</td>
<td>40</td>
<td>9.20</td>
<td>3.16</td>
</tr>
<tr>
<td>Fully-Simplified (Ver. II)</td>
<td>40</td>
<td>12.73</td>
<td>2.71</td>
</tr>
<tr>
<td>Semi-Simplified (Ver. III)</td>
<td>40</td>
<td>14.00</td>
<td>1.95</td>
</tr>
<tr>
<td>Lexically Simplified (Ver. IV)</td>
<td>40</td>
<td>15.05</td>
<td>1.99</td>
</tr>
<tr>
<td>Syntactically Simplified (Ver. V)</td>
<td>40</td>
<td>14.13</td>
<td>3.06</td>
</tr>
</tbody>
</table>

Table 2: Means and Standard Deviations for the Scores of the Five Groups

Mean scores of the 25-item reading comprehension test are shown in Table 2. Subjects who read the lexically simplified text scored highest (X=15.05), followed
by those who read the syntactically simplified text (X=14.13), then those who read
the semi-simplified one (X=14.00), followed by those who read the fully-simplified
text (X=12.73); those who read the authentic (un simplified) text scored the worst
(X=9.20).

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>SS</th>
<th>dF</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>839.27</td>
<td>4</td>
<td>209.82</td>
<td>30.47</td>
<td>0.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1342.65</td>
<td>195</td>
<td>6.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2181.92</td>
<td>199</td>
<td></td>
<td></td>
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</table>

\[ F = \frac{(4.195)}{3.41} \times 0.001 \]

Table 3: One-Way Analysis of Variance of All Versions

Table 3 presents the results of the ANOVA. There were significant differences among
the mean scores of the five groups (F=30.47, df=4, P<.001). The results of the
Multiple Regression Analysis (Table 5) show that a large amount of variation in the
total scores (38.5%) can be attributed to the language of the texts the students read.
This means that 38.5% of the data proportion of variability can be accounted for by
the effect of the variable used in the study, while the rest of the variation pertains to
variables other than the language of the text (e.g., sex, age, etc.).

The Tukey Post-hoc Comparison matrix (Table 4) shows that there were statistically
significant differences among the mean score of the subjects who read Version I
(the authentic text) and each of the mean scores of those who read the other four
versions (the simplified texts). Those differences were constantly in favour of the
simplified texts. However, the paired comparisons among the mean scores of the
subjects who read the simplified versions revealed a statistically significant difference
only between the mean score of those who read the fully-simplified text (Version II)
and the mean score of those who read the lexically simplified one (Version IV).

The Multiple Regression Analysis (Table 5) predicted that all the simplified versions
of the text (Versions II, III, IV, and V) would score better in reading comprehension
than the unsimplified (authentic) version. The regression equation shows that readers
of Versions II, III, IV, and V would score, respectively, 3.53, 4.80, 5.85, and 4.93
points higher than readers of Version I. Moreover, the magnitude of difference
between the predictive scores of Versions II and IV, which were the only ones
among the simplified versions to show a statistical difference in mean scores, was
2.32 in favour of Version IV (the lexically simplified text).
DISCUSSION

The null hypothesis concerning the effect of the differences in the language of the texts on comprehension is rejected by the results of this study. Statistically significant differences have been revealed among the mean scores of the five groups of subjects reading five versions of the same reading text (see the results of the ANOVA, Table 3). All groups who read the simplified versions scored significantly higher than the group who read the unsimplified (authentic) version. The study, thus, confirms the results of previous research that text simplification (in general) enhances comprehensibility for SL learners. This answers the first research question.

In answering the second and third research questions about the effects of the amount and type of simplification on reading comprehension, the study indicates that the relations between type and amount of simplification and improved reading comprehension are complex, as follows: (1) the study found no statistically significant difference in comprehensibility between the fully-simplified and the semi-simplified texts; (2) it also found no statistically significant difference in effect between the lexically simplified and the syntactically simplified ones; but (3) it did find a statistically significant difference in effect on reading comprehension between the lexically simplified and fully-simplified texts, in favour of the lexically simplified one. This result suggests that “too much” simplification can actually reduce reading comprehension; or it may be that when most of the language of the text is below the level of the reader, the reading comprehension is hindered rather than improved.

“Too much” simplification might have rendered the fully-simplified text significantly different from normal English in the areas of information distribution and organisation and so impeded comprehension. Furthermore, teachers usually spend more time in teaching grammar than teaching vocabulary (Steinberg, 1978). Therefore, it is expected that students, including the subjects of this study, are more familiar with the syntactic structures of the lexically simplified version (being authentic) than those included in the fully-simplified one (being modified). Thus, their achievement scores on the comprehension test on the fully-simplified version have dropped maybe due to several factors, one of which is the simplified syntax of this text.

The regression equation of the Multiple Regression Analysis provides an answer to the fourth research question: it can be predicted that the language of Version IV (the lexically simplified text) may produce readers who will score higher than the readers of other reading texts receiving different amounts of simplification, or syntactic simplification, or no simplification at all. This result is congruent with results of previous research focusing on the effect of lexical/semantic simplification on reading comprehension. For example, Blau (1982) and Brown (1987) found that language modifications involving the use of synonyms, paraphrases, and surface structure cues were more effective in producing higher levels of reading comprehension than other types of linguistic features, specifically syntactic ones.

Finally, one of the conclusions reached by Yano, Long, and Ross was that “When extraction of explicitly stated factual information is called for in a reading task, syntactic and lexical simplification may be sufficient aids for non-native readers” (Yano, Long and Ross 1994: 214). The results of this study present some evidence that extraction of such text-based (factual) information by FL readers may not be significantly affected by certain types of linguistic simplification, namely syntactic. What does make a difference however, could be the extent to which a grammatical (or linguistic) aspect is focused on by the curriculum of the FL, the teacher, the method of teaching adopted, or any combinations of these.

IMPLICATIONS FOR FL MATERIAL WRITERS AND TEACHERS

What implications do the findings of the current study have for L2 material writers and teachers? This study has shown that authentic texts are not always the best to give to students who are not ready for them, that simplifying written authentic texts may facilitate FL learners' reading comprehension, and that the use of lexically-simplified texts is much more justifiable than the use of the other types of texts. Therefore, the findings of this study appear to provide empirical support for proponents of simplified reading texts in the FL classroom. However, it is crucial that material writers dealing with selecting and modifying reading passages for FL learners be more selective in determining the features or aspects of simplification that should be included when modifying texts for pedagogical purposes. Moreover, the result revealed by this study concerning the difference in effect, between syntactic simplification and lexical simplification urges teachers of FL to continue balancing the different linguistic aspects of the text.

CONCLUSIONS

The major premise of the study, (that the simpler the text, the more comprehensible it becomes to L2 learners) is, in view of results, warranted. While it has been confirmed that simplification in general has a positive influence on the comprehensibility of texts, it nevertheless cannot be said likewise that the more simplification involved in the text, the more comprehensible it becomes to L2 learners. In fact, when amount of simplification is brought into play, it is more likely that the less the better. Moreover, the study shows that it is the type, rather than the amount of simplification, that may have a higher impact on reading comprehension. That is, the type of linguistic features involved in the process of simplification, not how many parts of the text receive simplification, will produce the needed modification to render a text more comprehensible to L2 learners.

It is hoped that the results of this study will add new insights to ongoing research about the influence of the different aspects of simplification on reading
comprehension. Future research in the field should go deeper in pinpointing the exact types of linguistic (and/or elaborative) modifications that contribute more effectively to the comprehensibility of a text. A hierarchy of correlations between such modifications and levels of comprehension is also in order.

Notes

1 S-node refers to the number of sentential branches in a tree-diagram. In English, the number of S-nodes can be identified simply by counting the number of verbs in a sentence.

2 Please see Appendix for a copy of the authentic text.

3 The validity of the simplified texts was established by having them read commented on and ranked by four instructors of English language at the MTIC: three native speakers and one non-native.

4 Based on the authors direct familiarity with the English curricula used at the MTIC and Omani schools specific vocabulary items have been determined to be more commonly used by or familiar to the subjects of the study.

This article derives from the author’s work in the Sultanate of Oman during a sabbatical year. The author’s sincere thanks to Professor Susan M. Gass for reading and commenting on a draft of this paper, Garry Cook of Michigan State University for his help with the statistical analysis, and Abdal-Hakeem al-Isma’ili and Ahmad Al-Dissi of Muscat Technical Industrial College for their assistance with the administration of the test.

REFERENCES


**APPENDIX**

**Version I**

**The Original (Authentic) Text**

**Pilots: A Special Position?**

(BERNARD FOX looks at the high salary pilots receive)

**Paragraph 1**

When British Airways and Air France first put their brand new Concorde into service their pilots had undergone some months of special training, just as any pilot now wishing to fly the supersonic plane must undergo a rigorous conversion course. Flying concorde is clearly not the same as flying a conventional airliner. There is, of course, nothing strange about this, for every time an airline decides to use a new aircraft, the pilots must be taught to adapt to its special needs and characteristics, and every time pilots fly new aircraft they demand new rates of pay. Many of us remember how British Airways were unable to use the new 747 until the Jumbo pilots were satisfied that they were getting adequate pay.

**Paragraph 2**

Both in the case of the Jumbo and the Concorde, the airlines and the pilots eventually reached an agreement, but in the future pilots will no doubt continue to press for more money every time the airlines introduce a new aircraft. As in the past they can argue that new aircraft requires extra skill and entails extra responsibility.

**Paragraph 3**

The whole question for how much pilots are paid was the subject of a television programme last week when David Yeadon interviewed an airline captain who was also an active member of the pilots’ union. Throughout the interview Yeadon insisted that pilots were overpaid; he even said that they were in a position to force the airlines to pay them whatever they wanted. The threat of a long strike often was enough, he said, to frighten airlines into producing the required money. The captain, naturally, argued that pilots deserved every penny they earned because of the responsibility they had, both in lives and money.

**Paragraph 4**

It is certainly true that the pilot’s position is a special one. By any standards, the training he has to go through is unusually tough. To get an air transport pilot’s licence he has to do a course that is at least as difficult as a university degree. Even then, the qualified pilot faces the constant risk of losing his licence just by failing
one of the six-monthly medical and flying tests which he has to take to ensure that he is still fit, and that his flying is still up to scratch.

**Paragraph 5** In most other jobs, a man reaches retiring age at sixty or sixty-five years old, but this is not the case with pilots. Their career ends in their early fifties— an age at which many other men are reaching the peak of their careers. It is difficult for a man of that age to find another job, and few pilots like the idea of being inactive so early, even if money is no problem.

**Paragraph 6** The main argument against the size of pilots’ salaries is that there is nothing special about the responsibilities they bear. Some people would argue that a train-driver is in the same position, and they would even go so far as to say that any bus-driver also deserves a much higher salary than he gets at present. It is a fact of our society that we underpay many of our most important workers. People have tended to think, for example, that nurses and teachers do their jobs because they feel a special ‘calling’. The argument here is that if the type of job they are doing satisfies them, they do not need to be highly paid. Here it is worth pointing out that most pilots take out a loss of licence insurance, and all of them receive a pension that is equal to half their pay.

**Paragraph 7** Whatever the rights and wrongs of the situation it is undeniable that there is something special about a pilot’s job. As we live our lives down here someone is in charge of a few hundred people thirty thousand feet above the Atlantic Ocean; it is not a responsibility most of us would wish. The question we should ask ourselves is how much that kind of responsibility is worth.