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THE DIFFERENTIAL EFFECT OF PRECEDING AND FOLLOWING CONTEXT ON GUESSING IN READING

Norma N. Murray
Cheryl Brown
Brigham Young University
Debra Smith
Marble Falls, Texas

Rationale for the Study

If one is to succeed in the modern world, the importance of reading in one's native language is self-evident. To any engaged in science, technology, and many other fields of endeavor, the importance of reading in English is just as self-evident. A huge percentage of all the information about those subjects published anywhere in the world is published in English. As a consequence of these circumstances today, some of the most important skills that ESL teachers need to help their students acquire are the skills of reading. For this reason, a great deal of time and a great many materials are devoted to the increasing of reading speed or reading comprehension, or both.

However, in the midst of a great amount of work in the development of methods and materials for teaching ESL reading, several researchers have mentioned a noticeable gap in the development of a viable theory to explain how reading in a second language takes place. (Eskey, 1973; Harris,
1970; Hatch, 1974; Robinett, 1970). The research reported in this paper, while not in any way claiming to provide a comprehensive theory of second language reading, was designed to help provide data which might be used in the development of such a theory. It specifically explores whether aspects of theories developed to explain reading in the native language can also be applied to help explain reading in a second language—in this case, ESL.

The model of reading in the native language that we have chosen to explore in ESL reading is that of Kenneth Goodman. Goodman (1970) has proposed that reading is "a psycholinguistic guessing game." In this theory, Goodman claims that reading involves tentative information processing. Readers interact with a graphic text using the strategies of sampling, predicting, confirming, and correcting to construct meaning. They process graphophonic (graphic, phonological, and phonetic), syntactic, and semantic cues simultaneously and interactively, as they use these strategies. The reading process involves visual, perceptual, syntactic, and semantic cycles, each interlocking (Goodman and Gollasch, 1960, 9-10).

Goodman (1970) also states succinctly that "Expectations are formed about input and meaning that lie ahead" (p. 508). If reading really is a "psycholinguistic guessing game" as Goodman proposes, then good readers ought to be better guessers; they ought to have more accurate expectations about what lies ahead. This is an idea that can be tested for both native readers and ESL readers. Related to it and possibly of even more practical import is the question about
how the guesses are made. If it should prove true that good readers are better guessers than poorer readers, what difference is there in the way the guesses of the two groups are being made. The answer to this question could be of value to methods and materials developers as they try to teach those skills which will provide the optimal access for their students to the vast body of literature written in English.

The purposes of the research reported here, then, are threefold. In a general sense, the research is designed to see if a model explaining reading in a first language can be used to explain reading in a second language. More specifically, it is designed to see if Woodman's hypothesis that good readers are good guessers can be proven true for both first and second language readers. Finally, the study is designed to see if the predicting strategies of second language readers are like the strategies of first language readers.

Review of Literature

Several researchers in reading have suggested that the answer to the question of whether good readers are good guessers is a definite "yes." (See Murray, 1976, for example.) In fact, the idea has become so well accepted that reading skill is often determined by a cloze test—a form of test in which the reader "guesses" what words deleted from a passage would be. The use of cloze passages
are advocated by some as a means of determining the reading ability of students (e.g., Clarke, 1930; Oller, 1972) and by others as a means of determining the readability of a passage (e.g., Anderson, 1971; Paulston and Bruder, 1976). Both uses are related and both point to a general acceptance by practitioners of the idea that reading and guessing are related.

With regard to what the predicting strategies of both first and second language readers are, Cziko (1978) has shown that L1 and L2 readers at advanced levels seem to make use of the same linguistic constraints while the lower and intermediate readers use the semantic restraints less. The lower level L2 readers also make less use of discourse constraints. Clarke (1980) compared the strategies of good and poor readers in their native language (in this case, Spanish) and in their second language (English). He found that in the first language, good readers made more use of semantic cues while poor readers made more use of syntactic cues. In the second language, both groups used syntactic cues the same amount and that amount showed slightly more reliance on syntactic cues by good L1 readers and quite a bit less reliance by poor L1 readers. With regard to the use of semantic cues in the L2, the good and poor L1 readers became much more alike again with poor readers using slightly fewer and good readers using considerably fewer.
Other researchers have looked at good and poor readers' strategies in a different light. Moyle (1968), Weber (1970), Southgate-Booth and Arnold (1975), Neville and Pugh (1975), and Potter (1982) have all suggested that the differences between good and poor readers lies in the fact that good readers make better use of succeeding context. Weber's study used miscue analysis and showed that good readers were more likely to return and correct initial incorrect readings in light of succeeding context. Neville and Pugh gave readers two versions of a reading comprehension test. The first was a normal cloze test and the second was a modified cloze test with all of the succeeding context removed. The researchers' prediction that better readers would show a greater drop in scores because of missing succeeding context proved true. Potter (1982) argued that the drop in scores could not be attributed to a greater reliance solely on succeeding context. He suggested that the Neville and Pugh results might be due simply to the fact that better readers might have greater knowledge of subject matter which more context allows them to pull in. Potter suggests that the same drop would have occurred if the preceding context were removed. Potter says,

The poor reader who was unable to produce the correct response in the normal cloze test because of his inadequate knowledge would not be affected by the removal of the succeeding context, whereas the good reader who was able to would be affected.
Potter also suggests that the Neville and Pugh work was partially invalidated by the use of scores on the normal cloze test to divide the readers into good and poor readers. In his experiment, Potter used a standardized reading test to divide his subjects and two version of a cloze test using items where the same information was deleted either as preceding or succeeding context. His results showed that the good readers were almost twice as likely as the poor readers to make use of the succeeding context.

Other researchers have suggested still other differences between good and poor readers. One of the theories of most current interest is with schemata theory. With regard to LI reading, Anderson, Reynolds, Schallert, and Doetz (1977) have proposed that less efficient readers may be different from better readers in any of three possible ways: 1) not having the background knowledge (schemata) needed to comprehend the passages; 2) having the background knowledge or schemata but not knowing how to use it in understanding a passage; or 3) not knowing how to change an original schemata being used if something in the passage shows that schemata to be illogical or inappropriate.

Anderson et al. say the reader goes through a process of matching details from the reading material to some internal idea of what the reading is about. If the details don't match, the reader may change his internal idea or the internal idea may be so strong that the information from the page which would contradict it may be overlooked.
Hudson (1982) explored whether helping L2 readers produce schemata would override the greater problems with the second language which inhibited their reading. He used three methods to induce schemata: pictures with questions and their writing of a prediction about what the passage would contain; standard study of vocabulary which appeared in the passage; and silent reading, a comprehension test, and then re-reading. Hudson's results suggested that advanced level L2 readers bring more background information to bear on the reading process than lower level readers. The advanced readers also seemed more capable of altering the schemata they were using in light of information received after the schemata was first induced. This study essentially looked at the predictions of the entire meaning of a passage rather than the prediction of separate phrases or words as is often studied, but the prediction of these larger units of meaning still fits Goodman's psycholinguistic model. The findings also lend support to the idea that the use of succeeding context may be one of the major differences between good and poor readers.

**Research Design and Methodology**

Two studies were undertaken to help answer the research questions posed. They involved the division of both native English readers and ESL readers into good and poor groups by use of a standardized reading test. The readers then took one of two guessing tests, one involving missing succeeding
context and one involving missing preceding context. The data were analyzed to see 1) if Joodman's theory about reading in a first language can be applied to reading in a second language; 2) if guessing skill really does relate to reading skill in both first and second language; and 3) if the reading strategies of good readers in both first and second language are the same. The answer to the first question is contained in the answer to the second and third questions.

The subjects used in the studies to answer the research questions consisted of 65 native English speakers and 55 ESL speakers. The first guessing study had 39 native English speakers and the second study had 26. The first study had 31 ESL speakers and the second study had 24. The native speakers were all students in regular university reading classes at Brigham Young University. The non-native speakers were enrolled in intensive ESL reading classes either at the Utah Technical College in Orem, Utah, or the English Language Center connected with BYU. The ESL group consisted of 20 Latins, 16 Japanese, 5 Vietnamese, 2 Chinese, and 2 Filipinos.

Research Design to Answer Question 2

In order to answer the second question of whether good readers were good guessers, the subjects in both the native English and the ESL groups were divided into good and poor readers according to their scores on the Nelson-Denny
Reading Test, Form B. This test is a standardized reading test consisting of a 10 minute/100 item vocabulary test and a 20 minute/30 item comprehension test. This test was chosen because it has been standardized and shown to accurately measure reading achievement (See Buros, 1976; Carney and Geis, 1981; and Geis and Carney, 1979) and because it did not make use of the cloze procedure about which Potter had complained. For each study the mean score of the subjects on the Nelson-Denny Test was figured for the native English speakers and all readers in that native English group scoring above that mean (Study 1 $\bar{x}=64.04$; Study 2 $\bar{x}=72.27$) were included in the study as good readers. All scoring below that mean were considered poor readers. The mean for the ESL readers (Study 1 $\bar{x}=36.13$; Study 2 $\bar{x}=29.88$) was also calculated and the subjects in that group were divided in the same manner into groups of good and poor readers.

The guessing test consisted of a 101-word reading passage taken from a 9th grade social studies textbook. According to the Dale-Chall readability formula, the passage was at an 8.9 grade level. This was below the average reading level of the combined groups as shown by the Nelson-Denny test. The content of the passage was general and appeared not to be culturally biased. (See Appendix A for the complete passage.) At no time other than after the last guess were students able to see the passage in its entirety. In the
studies, subjects were told that their task was to guess each of the 101 words of the passage. At the beginning of the task, subjects were told that the passage was taken from a social studies text and, after the subjects made each guess, they were shown the correct word which would fill the slot. In the first study, subjects began at the beginning of the passage and were guided in their guesses by the preceding context. In the second study, subjects began at the end of the passage and were guided in their guesses by the succeeding context.

The guessing test was scored by classifying the guesses students made into one of four categories: if the guess was exactly correct—3 points; if the guess was not the precise word but was a semantic possibility—1 point; if the guess was not the exact word but was syntactically possible—1 point; if no guess was attempted or if the guess fell in other than the mentioned categories—0 points. To illustrate the scoring process, we will look at the slot numbered 76 in Study 1 and 26 in Study 2. In Study 2, the subjects would have seen "______ raised for food." If a student guessed AdE, he would be credited with 3 points for the exact answer. If IS were guessed, or any word which syntactically would fill that auxiliary verb slot, he would be credited 1 point. And if the student guessed a noun like CHICKENS (the subject of the passage) or an adverb like COMMERCIALY, both of which semantically make sense in the
given context, he would receive 1 point. But if COUNTRY (a word related to previously given context but inappropriate to this slot) was guessed, the student would have received 0 points for the slot.

The subjects' scores on the guessing test were calculated and then those scores were correlated with their scores on the Nelson-Denny Reading Test using a Pearson product-moment correlation. It was assumed that if a significant positive correlation was found, that the answer to the question about whether good readers were good guessers would be yes.

Answer to Question 2

In Study 1, the Pearson product-moment correlation coefficient was .76 for the combined group of English and ESL readers. In Study 2, the coefficient was .77 for the combined groups. Both of these coefficients are significant at the .001 level (Study 1 df=66; Study 2 df=48). This suggests that good readers are indeed good guessers and poor readers are in fact poor guessers. The answer to research question 2 is yes.

Answer to Question 3

To answer the question about whether the reading strategies of good readers were the same in both languages, we looked at the partially correct guesses to see what proportion of them were syntactically correct (indicating a reliance on syntactic cues) and what proportion of them were semantically correct (indicating a reliance on semantic
cues). This part of the study was only performed on the data from Study 2.

In Study 2 where the subjects were making their guesses based on succeeding context, good L1 readers had 801 partially correct guesses with 381 (47.6%) being syntactically correct and 420 (52.4%) being semantically correct. Good L2 readers had 713 partially correct guesses with 341 (47.8%) being syntactically correct and 372 (52.2%) being semantically correct.

On the other hand in Study 2, the poor L1 readers had 932 partially correct guesses with 421 (45%) being syntactically correct and 511 (55%) being semantically correct. Poor L2 readers had 647 partially correct guesses with 294 (45.4%) being syntactically correct and 353 (54.6%) being semantically correct.

These statistics suggest that the strategies of good readers either in a first or a second language appear to be the same as far as being governed by syntax or semantics. Although the difference in the use of semantics and syntax is probably not significant for the population of the second study, the fact that the poor readers seemed to rely more heavily on semantic cues contradicts the studies cited previously (e.g., Cziko, 1976; Clarke, 1980).

In order to show which words seemed to be difficult or easy for the students to guess and, thus, to show whether there might be more advantage to students who did use either
the preceding or the succeeding context, a score was calculated for each slot using the total number of points earned by all subjects in each group for the slot. This total was then divided by the total number of points possible if each subject in the group got full credit. The result of these calculations yielded a percentage of correct guesses per slot. The slots were then grouped into one of eleven syntactic categories—infinitives, pronouns, auxiliary verbs, conjunctions, verbs, past participles, articles, nouns, prepositions, adjectives, and relative pronouns—and group totals for each category were figured. The group totals for each category from Study 1 (when the preceding context was used) were then compared by means of t-tests with the group totals for the same categories from Study 2 (when the succeeding context was used). It was assumed that any significant difference for any particular category would show the advantage that might accrue to a reader who only used one or the other kinds of context and might indirectly show a reading strategy that good readers could take advantage of. (It is important to note at this point that these studies were not set up in such a way as to be able to tell definitely if good readers actually do use the strategies of looking more at one context than another. These studies would only show whether there might be an advantage in doing so.)
The group totals and the observed t's for the various syntactic categories are given in Table 1 to Table 6.

### TABLE 1

**Good ESL Readers**

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
<th>Prep</th>
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<tbody>
<tr>
<td>Study1</td>
<td>30</td>
<td>61</td>
<td>14</td>
<td>33</td>
<td>03</td>
<td>29</td>
<td>00</td>
<td>49</td>
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<tr>
<td>Study2</td>
<td>32</td>
<td>59</td>
<td>32</td>
<td>31</td>
<td>49</td>
<td>31</td>
<td>38</td>
<td>33</td>
</tr>
</tbody>
</table>

| obs t | .46  | .23  | 2.38 | .19   | .95 | .40 | 5.83 | 2.74 | 2.73  | .22 |

| p<    | ns   | ns   | ns   | ns    | ns  | ns  | .01  | .01   | .02   | ns  |

### TABLE 2

**Poor ESL Readers**

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
<th>Prep</th>
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</thead>
<tbody>
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<td>Study1</td>
<td>23</td>
<td>34</td>
<td>05</td>
<td>27</td>
<td>42</td>
<td>23</td>
<td>08</td>
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<td>Study2</td>
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<td>21</td>
<td>27</td>
<td>47</td>
<td>26</td>
<td>30</td>
<td>24</td>
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</tbody>
</table>

| obs t | .76  | .03  | 1.99 | .18   | .43 | .81 | .67  | 4.03  | 2.52  | 1.55 |

| p<    | ns   | ns   | ns   | ns    | ns  | ns  | ns   | .001  | .02   | ns  |

### TABLE 3

**Total ESL Readers**

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
<th>Prep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study1</td>
<td>26</td>
<td>45</td>
<td>09</td>
<td>30</td>
<td>51</td>
<td>26</td>
<td>31</td>
<td>27</td>
</tr>
<tr>
<td>Study2</td>
<td>29</td>
<td>46</td>
<td>26</td>
<td>27</td>
<td>19</td>
<td>30</td>
<td>35</td>
<td>25</td>
</tr>
</tbody>
</table>

| obs t | .79  | .07  | 2.41 | .02   | .22 | 1.13| 1.68 | 3.59  | 2.84  | .93  |

| p<    | ns   | ns   | ns   | ns    | ns  | ns  | ns   | .01   | .01   | ns  |
TABLE 4

Good English Readers

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs V</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
<th>Prep</th>
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</thead>
<tbody>
<tr>
<td>Study1</td>
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<tr>
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<td>24</td>
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<td>36</td>
<td>58</td>
<td>46</td>
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</tbody>
</table>

obs t .05 00 2.20 1.61 .67 1.91 .32 2.42 4.31 .37

p< ns ns ns ns ns ns ns .05 .001 ns

TABLE 5

Poor English Readers

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs V</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
<th>Prep</th>
</tr>
</thead>
<tbody>
<tr>
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<td>14</td>
<td>38</td>
<td>65</td>
<td>45</td>
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<td>32</td>
<td>25</td>
<td>19</td>
<td>34</td>
<td>46</td>
<td>36</td>
</tr>
</tbody>
</table>

obs t .59 .94 3.15 1.07 .46 .52 .77 2.61 2.62 .18

p< ns ns ns .05 ns ns ns .02 .02 ns

TABLE 6

Total English Readers

<table>
<thead>
<tr>
<th>Noun</th>
<th>Pron</th>
<th>Pron</th>
<th>Verb</th>
<th>Verbs V</th>
<th>Inf</th>
<th>Adj</th>
<th>Art</th>
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<tbody>
<tr>
<td>Study1</td>
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<td>06</td>
<td>34</td>
<td>23</td>
<td>15</td>
<td>35</td>
<td>52</td>
<td>40</td>
</tr>
</tbody>
</table>

obs t .12 .25 5.73 1.35 .21 1.42 .54 2.49 3.44 .36

p< ns ns .01 ns ns ns ns .02 .01 ns

These tables show that some slots are easier to guess with a succeeding context than with a preceding context and
that some slots are easier to guess with just the opposite. For example, slots requiring adjectives were easier for readers from all subgroups to guess with following context than with preceding context. Not surprisingly, it seems easier overall for both ESL and native English readers to guess these prenominal slots using the post-slot context. It is the noun that governs these prenominal slots and having the noun makes the guessing of the words preceding it easier.

On the other hand, and also not surprising, is the fact that the infinitive verb seems easier to guess with preceding context. Here it is the infinitive marker "to" which signals that the infinitive verb (the simple form of the verb) is coming. Relative pronouns were difficult for all subjects in both studies as evidenced by the low scores of the groups on these slots.

Our answer to the third research question is still vague at this point. Although ESL and native English readers seem to make the same kinds of guesses as far as syntax and semantics go, the results of this research bring into question the idea that the use of one of these types of cues is more an activity of good readers than poor readers. Our readers seemed to use them both although the poor readers used them less effectively. Also, the differential scores for particular kinds of slots which this study reports cannot be taken as absolute proof that the use of either preceding or suc-
ceeding context is making a difference in reading ability. The findings of the studies do point in that direction however.

What does all this mean for the idea of reading theory and reading in a second language? The answer to this question is also a little uncertain. It appears that instruction in the use of all cues, syntactic or semantic would help, but there is no clear finding that can be said to favor one kind of instruction over another.

The case for teaching readers to use all of the context is strong in our results showing that some words are guessed much better from the succeeding context than from the preceding. If nothing else, it should be very clear that readers should be instructed to go on reading rather than stopping when they reach an unfamiliar vocabulary item. In light of these findings, cloze test developers should also be very clear in the instructions they give about how to perform a cloze test and/or very careful in selecting words to delete that can be guessed equally from the preceding and succeeding context unless the test developers specifically want to test whether a reader is using the succeeding context. Then items which can be guessed more easily on the basis of the succeeding context should purposely be deleted.

Overall, we feel that reader strategies can be discovered and that this is one area of psycholinguistic research deserving much further study.
REFERENCES


