Acquiring Second Language Vocabulary through Reading: A Replication of the Clockwork Orange Study Using Second Language Acquirers

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Adult second language acquirers were asked to read the first two chapters of *A Clockwork Orange*, a novel containing a number of slang words of Russian origin ("nadsat" words). Subsequent testing revealed modest, but significant incidental acquisition of nadsat words. This result replicates Saragi et. al.'s findings for native speakers of English and confirms that adult second language acquirers can acquire vocabulary from reading.

INTRODUCTION

A number of studies have shown that first language acquirers can acquire vocabulary by reading (e.g. Nagy, Herman and Anderson 1985, 1987). A particularly clever confirmation of this finding was done by Saragi, Nation and Meister (1978), who asked adult native speakers of English to read *A Clockwork Orange*, a novel containing 241 slang words of Russian origin, called "nadsat" words. Subjects were not told to try to learn or remember the nadsat words, but were only told that after they finished the book they would be given a test of literary criticism and comprehension based on *A Clockwork Orange*. The dictionary of nadsat words that is published at the end of *A Clockwork Orange* was removed from the copies the subjects read. A few days after they finished the book, subjects were given a multiple choice test covering 90 nadsat words. There was a significant amount of nadsat word learning: The lowest score on the multiple choice test was about 50% correct, and the average score was about 76% correct.

Ferris (1988) recently showed that university level students of English as a second language can also increase their vocabulary by reading. In her study, students read George Orwell's novel *Animal Farm* and were given a multiple-choice test before and after reading the book, covering words from *Animal Farm* that students at their level typically do not know. The students made significantly better gains on the test than control students who did not read the book.

In this paper, we report on a study in which students of English as a second

language were asked to read two chapers of *A Clockwork Orange* and were tested on their acquisition of nadsat words. An advantage of using this text is that nadsat words are not found in subjects' first languages, eliminating transfer as a possible source of vocabulary knowledge. Any gain after reading *A Clockwork Orange* would be, most likely, due to reading the text.

Our goals were to confirm that second language acquirers could acquire vocabulary incidentally from reading, and to see whether vocabulary acquisition in second language acquirers could occur with a more difficult text, and with a slightly different group of students.

METHOD

Reading Passage: Subjects read the first two chapters of *A Clockwork Orange*, a selection containing approximately 6700 words, including 123 nadsat words. The reading was done as an ordinary class assignment in ESL class; subjects were not told they would be tested on the nadsat words, nor were they instructed to learn and remember their meanings.

Vocabulary Measure: Thirty nadsat words were selected for the post-test, with frequencies ranging from 1 to 27. For each target word, a multiple choice test item was constructed. The distractors were chosen in such a way as to render partial knowledge, either semantic or grammatical, useless in distinguishing the correct answer. Each distractor was used only once. To insure that subjects knew the meaning of the distractors, all potential distractors were placed in a checklist vocabulary test and administered to a group of ESL students at a lower level from the target group. Only distractors known by this group were used.

Each item had four possible answers and a fifth "I don't know" option, with the correct choice randomly alloted to one of the first four positions.

The test was scored in the following manner:

$$\text{correct choice} = 1.00$$

$$\text{incorrect choice} = -0.33$$

$$\text{I don't know} = 0.00$$

In this way, the test was corrected for guessing. This procedure is based on the formula:

$$\text{Score} = \text{rights} - (\text{wrongs}/n-1)$$

where n is the number of choices (Thorndike 1982; see also Herman et. al. 1987).

SUBJECTS: Two experimental groups and one control group were used.

Experimental Group 1 (Fairfax): Thirty five adults (age 20 and older) studying

English as a second language at Fairfax Community Adult School in Los Angeles took part in the study. All subjects were members of an intact intermediate level class focussing on reading and writing. Students can be placed in this class by examination or can work their way up through previous courses, which typically takes two years of study.

Subjects were given 60 minutes to read the chapters. The test was administered after a ten minute break. An item analysis revealed that two items had abnormally high scores. The first item was *nochy*, meaning "night". This is close to the Spanish word for "night", *noches*. The second item was *moloko*, meaning "milk". Both items were removed from the analysis of this group's performance.

Experimental Group 2 (Santa Monica): Sixteen adult intermediate college ESL students, 16—30 years of age, from Santa Monica Community College served as subjects. Because of the difficulty of the text, it was decided to give the subjects some background knowledge of the story before they started reading. This was done by showing the first two scenes of the film version of *A Clockwork Orange*. In these scenes, seven nadsat words were spoken, each once, but only one was a target word. After viewing the first two scenes, subjects were given 40 minutes to read the passage. After a ten minute break, subjects took the nadsat vocabulary test.

The nadsat test was slightly modified for this group. One item, **nochy**, was replaced, and the item **moloko** was rewritten.

Control group: The control group consisted of 23 adult subjects from ESL reading and writing class at Los Angeles Community College. This group took the nadsat word test, as modified for the experimental group in our Study 2 (Santa Monica). They did not read *A Clockwork Orange*.

While subjects in all three groups were enrolled in classes at approximately the same level, we did not attempt to determine whether the groups were at precisely the same level of English language development, nor was this necessary for our study. Our prediction was that the control group would perform at a chance level on the nadsat test, while the experimental groups would do significantly better. The function of the control group was to confirm that the nadsat words were indeed unknown to ESL students. Using a control group is preferable to administering the nadsat words as a pre-test, since a pre-test might alert subjects to our purpose, and focus their attention on vocabulary acquisition, changing the task from incidental to intentional learning.

Since the vocabulary measure for experimental group 1 differed slightly from that for experimental group 2, and the control group took the test as modified for group 2, two control group means were calculated: One for the test as used for group 1, with two items dropped from the calculation, and one for group 2.

RESULTS

As indicated in table 1, both experimental groups exceeded control group performance. As expected, the control group scored near zero. The differences were statistically significant (group 1 and control; $t = 2.12$, df $= 56$, p$<$.05; group 2 and control; $t = 3.137$, df $= 36$, p$<$.01; two-tailed tests). Effect sizes were computed by converting t-scores into Pearson Product Moment Correlations (Wolf 1986). For group 1 and control, $r = .27$; for group 2 and control, $r = .46$. These results, though modest, indicate that some nadsat vocabulary was acquired through reading.

Table 1: **Mean Scores and Standard Deviations for Two Experimental Groups and Control Group**

	n	mean	standard deviation
Exp Group 1 (Fairfax)	35	1.81	4.26
Control 1	23	-0.097	2.59
Exp Group 2 (Santa Monica)	16	2.42	2.64
Control 2	23	-0.21	2.58

Note: One Group served as control 1 and control 2. Control 1 data based on 28 items, control 2 data based on 30 (see text)

DISCUSSION

Subjects in both experimental groups made small but significant gains in vocabulary; Group 1 scored 6.4% on the nadsat test (1.81/28), while Group 2 scored 8.1% (2.42/30). Our results, however, give a conservative picture of vocabulary growth from reading, for these reasons:

1. As noted earlier, distractors were chosen in such a way so that partial knowledge of a word did not help. Thus, subjects may not have gotten credit for acquiring aspects or features of a word's meaning.

2. The text was very hard. Over 50% of the subjects in the experimental groups did not completely finish reading the two chapters in the time alloted.

3. Our subjects read only part of *A Clockwork Orange*. Recall that Saragi et. al.'s subjects read the entire book, which gave them the advantage of more encounters with the words and better knowledge of the story.

4. The reading was not self-selected and was not in the subjects' major field of interest; subjects thus had little background knowledge to help make the text comprehensible, and in some cases might have had little interest in the story.

5. We only tested twenty of the 123 nadsat words that appeared in the first two chapters. Subjects may have acquired nadsat words that were not tested, as well as regular English words.

Our results confirm first language findings, that reading for meaning can result in a small but reliable increase in word knowledge (Nagy and Herman 1987: 26). Nagy et. al. (1985) argue that this small increase, however, is enough to account for the massive amount of vocabulary acquisition seen in children, if enough reading is done. Their results are thus consistent with the suggestion that most first language vocabulary comes from reading (Smith 1982).

Our results, along with those of Ferris (1988), show that that adult second language acquirers can also acquire vocabulary by reading, and suggest that reading can be an important source of vocabulary in second language acquisition. This implies that second language students should do a great deal of comprehensible reading, a conclusion we are sure many teachers would agree with, but few programs build in explicitly.

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