

The Effect of Raising Morphological Decomposition Awareness on Lexical Knowledge of Complex English Words

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Abstract

Lexical knowledge of complex English words is an important part of language skills and crucial for fluent language use. This study aimed to assess the role of morphological decomposition awareness as a vocabulary learning strategy on learners' productive and receptive recall and recognition of complex English words. University students majoring English at the English department of Kerman University were randomly assigned to three groups: form-focused group which learned the words by being morphologically decomposed to them; meaning-focused group to which the glosses were presented by being defined and used in a sentence; and a control group, rote memory, the members of which were asked to only memorize the glosses. TOEFL and VLT pretests showed comparable results among the three groups ($p > 0.05$). However, in post-tests the participants in the form-focused group achieved higher scores in all four aspects of lexical knowledge than the other two groups ($p < 0.05$). Morphological decomposition strategy is recommended as a very useful strategy for learning complex English words.

Keywords: second language acquisition, morphological decomposition, productive recall, receptive recall, recognition

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Introduction

Vocabulary is said to be a key part of any Second Language Acquisition (SLA) program. The last two decades has seen a revival of interests in teaching vocabulary. Vocabulary knowledge is one of the language skills crucial for fluent language use (Nation, 1993). Vocabulary size is an indicator of how well the second language (L2) learners can perform academic language skills such as, reading, listening, and writing (Bear, Invernizzi, Templeton and Johnston, 2008; Treiman & Casar, 1996). According to Nation (ibid), knowledge of around 3,000 word families is the threshold needed for tapping other language skills. Without this threshold, learners encounter problems understanding the language they are exposed to (Alderson and Banerjee, 2002).

In the field of (SLA) research, despite the fact that vocabulary is central to language and crucially important for second language learners, it has not been given the attention it deserved. This stands in sharp contrast to the fact that lexical errors are the most common among second language (L2) learners. As Gass (1988) cites, grammatical errors still result in understandable structures, whereas vocabulary errors may interfere with communication. A student who knows what advice means, but does not know that it is used as an uncountable noun, and says 'The mother gave her daughter many advices', will be understood in spite of the grammatical error. On the other hand, a student who knows that advice is used in singular but confuses its meaning with *advance*, for example, will experience a break in communication.

The research literature in vocabulary learning in SLA has revealed the importance of knowing a sufficient number of words to be able to function in an L2 (Nation, 2001; Read, 2004; Zimmerman, 2005). The development of adequate vocabulary size is vitally important, and researchers have examined the use of learning strategies as one means to scaffold the development of L2 vocabulary knowledge.

One way in which vocabulary learning can be fostered is through the use of learning strategies. Vocabulary learning strategies are techniques through which L2 learners discover the meaning of unknown words, and integrate and consolidate newly acquired vocabulary (Schmitt, 1997). These strategies are consciously or

unconsciously learned techniques for processing information in order to enhance learning, comprehension and retention (O'Malley and Chamot, 1990).

There are different types of vocabulary strategies cited in the SLA literature. Schmitt (1997) categorized these strategies into: Memory Strategies, Social Strategies, Cognitive Strategies, Metacognitive Strategies. He further considers the analysis of lexical items into affixes and roots, i.e. morphological decomposition, strategy a sub-strategy of memory strategies. Nation (2001) classifies vocabulary learning strategies into three general class of strategies, namely; planning, sources, and processes. Analyzing word parts, in his classification, is included in sources.

Morphological decomposition awareness is defined as the ability to use the knowledge of word formation rules (prefixes, roots or stems, and suffixes) and the pairings between these and meanings (Kuo & Anderson, 2006). Knowledge of lexical roots (etymological and morphological information) can assist in vocabulary development in that it helps students predict or guess what a word means, elucidate why a word is spelt the way it is, and remember the word by knowing how its current meaning develops from its morphological roots. Students should learn to identify morphemes which recur in a number of words and which can help them to identify at least part of the meaning, thus assisting them in guessing from context the meaning of apparently new items (Rivers, 1981). Using the morphological decomposition technique, learners are taught morphemes and morphemic boundaries by breaking complex words into their meaningful parts (e.g. they are told that the word *progress* is composed of the elements *pro* (forward) + *gress* (move, walk)). Then, they are asked to put the meanings of the constituent parts back together reaching the new meaning so that the meaning of the said example would be 'forward movement towards a destination'. In the third step the learners are helped to extrapolate the known elements to novel or yet unknown lexical items. For instance they are asked to guess the meaning of the derivationally related words like; *regress*, *digress*, *congress*, *aggress*, *retrogress*, *ingress*, and etc. This process helps the learners to make a tangible link between the form and meaning. In fact, most vocabulary tests focus, directly or indirectly, on this form-meaning link (Laufer B. and Goldstain Z. 2004).

Direct tests of the form-meaning link are tests in which the learners are required to demonstrate their understanding of the target words or produce the target form for given meanings (see, for example, Laufer & Nation, 1999; Meara & Buxton, 1987; Nation, 1983; Schmitt, Schmitt, & Clapham, 2001).

Indirect tests of the form-meaning do not look like word-meaning tests (Arnaud, 1992; Laufer & Nation, 1995; Read, 1993; Schmitt, 1999; Wesche & Paribakht, 1996), yet the form-meaning link is central to what is being tested. For example, a test of associations, whether alone or in conjunction with other areas of knowledge, also tests whether the meaning of the target word is known. In such a test (Read, 1993), the learner is, for example, asked whether the word tested is related to some other words.

Although only a few studies have examined the role of morphological decomposition in L2 vocabulary development, the findings suggest that various aspects of raising *morphological awareness* may be particularly useful for vocabulary building.

According to Nation (2001) learning word parts has two advantages: firstly, in case of unfamiliar words, one can relate the unknown to the known. Secondly, it helps to check whether guessing from context is successful. Considering the effect of knowledge of morphological structure on learning of English words, it seems necessary to develop a strategy to overtly present word parts.

Receptive and productive recall and recognition of Vocabulary Knowledge

Most vocabulary researchers distinguish between receptive (passive) and productive (active) knowledge of a word (e.g., Meara, 1990; Nation, 2001; Waring, 1997). Receptive knowledge is associated with listening and reading and implies that we are able to comprehend the input. In vocabulary, this means that we are able to perceive the form of the word and retrieve its meaning or meanings. Productive knowledge is associated with speaking and writing and implies that we can retrieve the appropriate spoken or written word form of the meaning that we want to express. The terms receptive and passive, productive and active are used interchangeably in this article. Takala (1984), in an experiment, in order to tap receptive word knowledge of his subjects asked them to provide L1 equivalents of some L2 words.

He asked for the second language (L2) equivalent of a given L1 word in order to test the learner's productive knowledge (ibid).

Waring (1997) used another testing method to check form-meaning link asking the learners to *select* the correct answer from several meaning options for the given word or to select the correct answer from several word forms for a given meaning. Takala's tests were recall tests while Waring's were recognition tests.

In this study, following Laufer and Goldstain (2004), we distinguish among four degrees of knowledge of lexical meaning which are based on two dichotomous distinctions as follows. We also hypothesize that they constitute a hierarchy.

1. Supplying the form for a given meaning versus supplying the meaning for a given form,

2. Being able to recall versus being able to recognize (whether form or meaning).

The first distinction implies that there is a difference in knowledge between people who can supply an L2 word and those who can only supply the meaning when the L2 word is presented to them. We will refer to the ability to supply the word form as productive knowledge and to the ability to supply the word meaning as receptive knowledge. The second distinction implies that there is a difference in knowledge between those who can recall the form or the meaning of a word and those who cannot recall but can recognize the form or the meaning in a set of options.

Degrees of vocabulary knowledge

The two distinctions mentioned above help us to differentiate four degrees of vocabulary knowledge of meaning as illustrated in Table 1.

Table (1) Degrees of vocabulary knowledge

DISTINCTIONS	RECALL	RECOGNITION
PRODUCTIVE RETRIEVAL OF FORM	SUPPLYING THE L2 WORD	SELECTING THE L2 WORD
RECEPTIVE RETRIEVAL OF MEANING	SUPPLYING THE L1 WORD	SELECTING THE L1 WORD

Laufer B. and Goldstein Z. (2004) hypothesize that knowledge of word meaning constitutes a hierarchy in which some degrees of knowledge are more advanced than others and presuppose the less

advanced degrees of knowledge. Accordingly, regarding receptive/productive dichotomy, it is assumed that L2 learners' receptive vocabulary is larger than their productive vocabulary (Laufer, 1998; Laufer & Paribakht, 1998). This means that many words are first acquired receptively and that productive knowledge is a more advanced degree of knowledge. Another corollary is that a person who can retrieve the word form for a given concept is typically able to retrieve its meaning upon encountering the form. As for the recall/recognition dichotomy, recall of information indicates a better memory trace than recognition of the same information. Hence, recalling a word's meaning or form can be considered a more advanced degree of knowledge than recognizing it in a set of options. The four degrees of knowledge are here referred to as degrees of vocabulary knowledge. If productive knowledge is more difficult to achieve than receptive knowledge, and if recall is more difficult than recognition, then we can assume that the most advanced degree of knowledge is reflected in productive recall and the least advanced knowledge is receptive recognition. As for the two remaining degrees of strength, receptive recall and productive recognition, receptive recall is said to be psychologically more demanding than productive recognition (Laufer B. and Goldstein Z. 2004; and Waring 1997).

Methodology

This study aimed at examining the effect of lexical decomposition awareness and its role on productive and receptive recall and recognition of vocabulary knowledge of morphologically complex English words in an Iranian EFL context.

Participants

The participants in the study were three groups of university students majoring English at the English department of Kerman University. All of the participants were university students admitted at BA Level in the mentioned university through participation in the Nationwide University Entrance Exam. Ninety participants were selected and randomly assigned to the above-mentioned three groups. Each of the three groups consisted of thirty freshmen, both female and male, and their age range was 18 to 22. At the onset of the study, all three groups had 30 subjects in them. After administering the homogeneity tests,

however, the subjects in the first group, i.e. the form-focused group, and the third group, the rote memory group, decreased to 28. The first group and the second group, that is the meaning-focused output group constituted the instructional groups and the third group was the control group.

Instruments of the study

In the study, the following tests and instruments were employed.

Homogeneity instruments: Initially, all three groups sat a TOEFL Test and a receptive and productive Vocabulary Level Test at 2000 and 3000 word level one week prior to commencement of the main study to make sure that they are homogenous in terms of their general English and vocabulary knowledge. The maximum attainable score for the TOEFL test was 50 and for the four Vocabulary Level Tests was 30.

Treatment instruments: Preparation of the treatment materials: At this stage of the study, the researchers selected 1000 complex Latin- and Greek-based English words from 5000 TOEFL word list. We, then, randomly chose 100 lexical items (nouns, verbs and adjectives) from the mentioned 1000 lists to comprise a master list. Morphologically, all of the words in the master list were complex in that all were prefixed words. Moreover, the lexis in the list contained the most frequent and productive word parts as identified by Nation (2001, p. 268).

The words in this master list were further randomly grouped into ten sets each of which contained 10 words in the form of vocabulary sheets. The words were taught to experimental groups within ten one-hour sessions, each group one session per week. Each session was allotted to only one vocabulary sheet which was handed out to the participants on the session. Before commencement of the treatment, the sheets were prepared and copied. The subjects in the control group, however, were only given the sheets and asked to simply memorize the items.

Presentation of the treatment materials: The above-mentioned materials were presented to the different groups differently. The first experimental group, i.e. *the form-focused group*, learned the words by being morphologically decomposed to them, i.e. the ten lexical items of each session were explicitly broken into their constituent parts in

terms of their prefixes, suffixes, and roots/stems raising their consciousness regarding the force of word elements thereby getting to the meaning of the words. As with the second experimental group, i.e. *the meaning-focused output group*, the glosses were presented, being defined and applied in a sentence. The members of this group were also required to use each word in a novel sentence themselves. The members in the third group—*the rote memory group*—which functioned as the control group, were given no special treatment but to memorize the meanings of the glosses.

Post-test instruments: After the treatment, using computer, the words in the master list were shuffled and quite randomly divided into four 25-item sets. Then, the researchers turned the items in each set into a test, totally four 25-item tests like what follows.

A. productive recall task; here the task was to supply an L2 equivalent for an L1 prompt. For example:

<i>ITEM No.</i>	<i>Persian Word</i>	<i>English equivalent</i>
1	

B. receptive recall task: this task required the participants to demonstrate their understanding of the meaning of an L2 word given as prompt.

<i>ITEM No.</i>	<i>English word</i>	<i>Persian equivalent</i>
1	Expose

C. productive recognition task: this task asked the subjects to select the target word from among four options. The prompt is the L1 translation of the target word. The options include the target word and three distracters that were semantically unrelated to one another. The test items were prepared by the researcher and were checked for validity, reliability and internal consistency before being used.

<i>ITEM No.</i>	<i>Persian word</i>	<i>English equivalent</i>
1		A. synchronic B. proficient. C. heterogeneous D. donator

D. receptive recognition task: here L2 words were given as prompts and the task was to choose their meanings from among four options in the learner's L1. The test was prepared by the researcher and was checked for its validity, reliability and internal consistency before being used.

<i>ITEM No.</i>	<i>English word</i>	<i>Persian equivalent</i>
1	<i>magnanimous</i>	

Statistical analysis

Results are given as mean \pm Standard deviation (SD) with $p < 0.05$ taken as the level of significance. One way ANOVA was used to compare exam scores in three separate groups followed by pair-wise comparisons using post-hoc Tukey HSD test. The data was analyzed using SPSS version 17.

Results

The results of pretest scores with TOEFL Test and a receptive and productive Vocabulary Level Test at 2000 and 3000 word level are shown in Table 1. The three groups were comparable with regard to general English and vocabulary knowledge ($P > 0.05$).

Table 1. Pretest results by groups

Group	Total number	Mean \pm SD				
		TOEFL	VLT 1	VLT 2	VLT 3	VLT 4
Form-focused	30	30.8 \pm 4.2	28.7 \pm 1.2	26.5 \pm 3.1	16.2 \pm 1.5	11.0 \pm 3.1
Meaning-focused output	30	30.8 \pm 3.4	28.0 \pm 2	27.0 \pm 2.7	15.4 \pm 2.0	12.0 \pm 2.1
Rote memory	30	30.0 \pm 3.2	28.5 \pm 1.1	27.8 \pm 1.7	16.3 \pm 1.2	12.1 \pm 2.2
F	--	0.466	1.960	1.946	3.070	1.766
P	--	0.629	0.147	0.149	0.051	0.177

VLT = Vocabulary Level Test

Table 2 highlights the significant differences between the three groups, based on vocabulary knowledge of morphologically complex English words.

Table 2. Group means and standard deviations for the receptive recall, productive recall, receptive recognition, and productive recognition scores by treatment group

Group	Total number	Mean \pm SD of post-intervention tests			
		receptive recognition	productive recognition	receptive recall	productive recall
Form-focused	28	22.4 \pm 3.4	22.3 \pm 3.0	16.7 \pm 3.7	16.5 \pm 3.8
Meaning-focused output	30	20.1 \pm 2.8	17.7 \pm 4.0	13.3 \pm 3.6	10.4 \pm 2.9
Rote memory	28	19.2 \pm 3.6	15.2 \pm 3.4	12.4 \pm 2.5	9.1 \pm 3.1
F	--	6.850	28.920	12.894	40.000
P	--	0.002	<0.001	<0.001	<0.001

Post hoc analysis showed that the results in relation to the effect of the treatment on the four immediate exam scores are not uniform (Table 3). The subjects in the form-focused group had higher scores in all of the four exams comparing to the other two groups ($P < 0.05$), but in some instances there was no difference between the meaning-focused output group and the control group (Table 3).

Table 3. Results for the Post Hoc Analyses

Test	Group	Meaning-focused output	Rote memory
receptive recognition	Form-focused	<0.05	<0.05
	Rote memory	0.588	--
productive recognition	Form-focused	<0.001	<0.001
	Rote memory	<0.05	--
receptive recall	Form-focused	<0.001	<0.001
	Rote memory	0.560	--
productive recall	Form-focused	<0.001	<0.001
	Rote memory	0.301	--

Discussion

Different researchers prefer different vocabulary tests, depending on their view of vocabulary knowledge, their preference for a particular dimension of knowledge, and their interest in size or depth. In this article we tried to assess the knowledge of discrete lexical items on the basis of form/meaning and recall/recognition distinctions. All in all, the results of the study showed significant outperformance of group one, i.e. form-focused group undergone morphological decomposition strategy.

Regarding *receptive recognition tasks* the scores obtained by the form-focused group were significantly higher than the other two groups, while the differences between group two, meaning-focused output group, and group three, rote memory group, were not significant.

As with *productive recognition tasks*, again group one obtained higher scores than the other two groups. However, contrary to the *receptive recognition tasks*, group two attained significantly better results than that of group three.

With regard to *receptive recall* and *productive recall tasks*, the results were comparable to *receptive recognition task* in that group one achieved significantly better results than the other two groups while the difference between group two and three were insignificant. Thus, generally, while group one had a significantly better performance than groups two and three in all four tasks, group two significantly outperformed group three only in productive recognition task.

The findings of the research are in line with other studies. Nielsen (2006) reports that de-contextualized vocabulary instruction is more effective than contextualized instruction at elementary levels of language development. Oxford and Scarcella (1994) observed that memorizing vocabulary (e.g. word lists) is likely to rapidly perish. Also the studies done by O'Malley, Chamot (1990) and Oxford (1990) have shown that memory strategies involving deeper processing of target words are more effective and durable than memorization techniques involving shallow processing such as rote repetition.

The significant outperformance of the first group has justifiable regarding theories like Depth of Processing Model of Craik and Lockhart (1972), and Involvement Load Hypothesis of Laufer and Hulstijn (2001) which suggest that retention partly depends on how deep information is processed during learning. Consequently, as the subjects in the first group learned the words by breaking them into their constituent parts which resulted in deeper processing and finally in better recall and recognition.

Elaboration hypothesis propounded by Craik and Tulvign (1975) asserts that when a piece of new information is connected to information that already exists, it is enriched and makes more robust memory traces. In other words, the more the new information is related to pre-existing

information, the more likely it would be remembered. By learning the recurring word elements, the subjects in the first could possibly form better and sounder vocabulary-concept pairings.

Prior research has demonstrated that teaching morphologically complex words at college preparatory level can assist students' readiness (Bellomo 2005). Laufer and Goldstein (2004), using computerized test of vocabulary size test showed that lexical knowledge hierarchy was present at all word frequency levels and that growth in vocabulary knowledge was different for the different modalities. Nurhemida (2007) studying correlation between subjects' scores on Morpheme Identification test and VLT found that they were significantly correlated .

It would be interesting to replicate the study using larger scales. It would also be advisable to administer a similar study separating morphologically transparent and opaque words. It might also be useful to carry out the same study in other colleges with some modification, for instance, gender control, and compare the results.

Conclusion

The conclusions reached in the study may shed some light on the teaching of English in general and vocabulary intervention programs in particular in Iran. We believe that a new morphologically-oriented outlook of vocabulary instruction should be developed and utilized by English materials and curriculum developers, syllabus designers and teachers specifically in regard to the followings areas;

A Course may be incorporated into curriculum of all English major students in and during which they are taught the most useful and productive English word elements (prefixes, roots, and suffixes). Such a course already exists for the students of English Translation—namely English etymology and word formation processes. But it is advisable, even necessary, to have the same for those studying English teaching methodology and Literature.

Incorporating tasks, drills and exercises in English materials, especially in ESP books, which present and test the most helpful English word elements is highly recommended. The researchers specifically advise authorities in SAMT publishing company to take into consideration the incorporation of such exercises in their ESP textbooks.

As teaching word parts promotes receptive and productive recall and recognition of complex English words, English language trainers and teachers should pay heed to these parts and present them as need arises.

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