

## Exercise Types and Word Meaning Remembrance

Reza Ghaffar Samar<sup>1</sup>, Gholamreza Kiani<sup>2</sup>, Mohammad Rahimi<sup>3</sup>

### Abstract

The present study is an attempt to contribute to the L2 acquisition research through finding an appropriate answer to the question usually asked by both language teachers and learners, namely how to learn vocabulary and how to retain meanings in memory over time. We have chosen to discover the effects of two major types of productive exercises, writing and oral production exercises, on the remembrance of word meanings over time: 24 hours, one week, and one month after learning the vocabulary. For this purpose, two linguistically homogeneous L2 classes received ten sessions of treatment each: in one of these classes, 100 vocabulary items were practiced through controlled writing exercises and the other class practiced the same items through controlled oral exercises. The preliminary results indicate the positive influence of oral production exercises on meaning remembrance over time, i.e., after one month, while the two exercise types did not show any significant differences in their effects on in class vocabulary learning processes.

**Keywords:** Exercise Types, Oral/Written Practice, Vocabulary, Meaning Remembrance.

### 1. Introduction

“Vocabulary”, on the one hand, “is central to language and crucially important for second or foreign language learners” (Segler, 2001:1). On the

other hand, ‘human memory’ is considered to be crucial to the concept of learning and to the acquisition of language (Schmitt and McCarthy, 1997). The importance of both these issues in

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1. Assistant Professor, Tarbiat Modares University, Email: [rgsamar@hotmail.com](mailto:rgsamar@hotmail.com)

2. Associate Professor, Tarbiat Modares University

3. M. Sc. Student, Tarbiat Modares University

language acquisition has led to a considerable research on each, yet the place where they intersect has attracted a noticeable lack of attention for many years until the last two decades (e.g. Anderson 1994; Bahrich 1984, cited in Cook 1991).

A brief review of these recent studies provides evidence for the importance of human memory for the concept of learning in general, and for language acquisition in particular, which includes the important area of vocabulary learning. Cook (1991), for instance, argues that “the problem lies not just in learning L2 words, but also in remembering them” (p. 40). These arguments emphasize that vocabulary acquisition is like fighting two battlefields. If we can learn the meaning of the words, we will have won only half the battle; and the failure in the second half will be disappointing for both teachers and learners.

A large number of studies have emphasized this key role in L2 vocabulary acquisition. However, the history of these studies show a changing trend in how words can be remembered best. The starting point of the earlier ones is the classic proverb “practice makes perfect”. In other words, they are mostly concerned with how memory improves with practice. This preoccupation with the effects of huge amount of practice on vocabulary learning was dedicated by the common lore among teachers about practicing as much as possible, the influence of Ebbinghouse’s studies (Gregory, 1987; Anderson, 1994) and the investigations of Anderson (1994). They explored how practicing leads to a better long-term recall.

However, some other research findings have suggested something different, although these

findings are not much. They emphasize the importance of ‘how’ a word should be practiced rather than ‘how often’. One of the most notable researches in this regard is Bahricks’ 1984 study. He finds the word that is learnt after only one or two presentations is remembered better than the one that takes several presentations. The results of a more recent research by Laufer and Hill (2000, cited in Segler, 2001) also indicates that the number of encounters with a word do not correlate well with its retention. And as Segler concludes “the nature of mental processing seems to be more important than the number (quantity) of encounters” (p. 23).

With a general agreement on the importance of the nature of mental processing, some studies examine the effect of different vocabulary exercise to see which one may lead to a deeper semantic involvement and consequently to more durability in remembrance. Some of these researchers have focused on comparing output-(or productive) and input-(or receptive) dominant exercises to see which one of these major types of vocabulary exercises facilitates the remembrance of words more efficiently. The study by Paribakht and Wesche (1997), demonstrates that productive vocabulary exercises significantly increase vocabulary knowledge, compare with input-dominant exercises. Moreover, some others have found positive evidence that ‘productive exercises’ need more understanding than ‘receptive ones’, therefore, improve the chances of future word meaning remembrance (see for instance: Altman, 1997; Kitajima, 2001; Zimmerman 1997).

Given these research findings and the arguments more complex processes involved in production in comparison to comprehension (e.g., Bock and Griffin, 2000), it seems reasonable to claim confidently that productive-based vocabulary exercises lead to a deeper semantic involvement than input-dominant vocabulary exercises. However, there are

different exercise types within these two general categories. Written and oral production exercises are among the best known productive-based exercises with fundamental differences from each other, as mentioned by Ellis and Beattie (1986) and shown in Table 1. Now the question is which one is more effective for the remembrance of word meanings?

**Table 1** Speech vs. Writing

Speech	Writing
<ul style="list-style-type: none"> <li>• Normally occurs in the context of shared social activity.</li> <li>• Immediate feedback from individuals to whom message is directed.</li> <li>• Development of text is negotiated between co-conversants.</li> <li>• Little revising and lexically simple.</li> </ul>	<ul style="list-style-type: none"> <li>• Normally occurs in isolation.</li> <li>• Social feedback is delayed or nonexistent.</li> <li>• Development of text is determined by writer alone.</li> <li>• Syntactically and lexically complex.</li> </ul>
Ellis and Beattie, 1986:200-1	

This question seems to be important firstly because very few studies so far has examined vocabulary learning through an oral mode. And secondly, there are some arguments emphasizing characteristic differences between oral production and writing (Ellis and Beattie, 1986), the processes involved in each (McCarthy and Carter, 1997; and Bock and Griffin, 2000), and the effect of vocabulary acquisition through each mode. And, in spite of all these arguments, it is not quite clear whether there is a significant difference between these two types of exercises with respect to their effect on the remembrance of word meaning, especially over time.

Having this in mind, the idea that “the *nature* of mental processing is crucial for long-term memory retention” (Segler, 2001: 24) we make an attempt to

discover the relations between the extent of word meaning remembrance and practicing words through controlled oral production and writing exercises.

## 2. Purpose and Method

It is often mentioned that the main objective of most vocabulary instruction classes is “to remember the meanings of new words over time” (Brown and Perry, 1991: 655), while “the decline in word meaning remembrance over time is disappointing” for both teachers and learners (Lawson and Hogben 1998: 181). This comprises one of the most basic issues that our teachers face in their vocabulary teaching classes. The present study is an attempt to tackle this problem. In order to achieve this purpose, the subjects’ performances on vocabulary acquisition were tested in three

occasions: 24 hours, one week and finally one month time intervals after finishing the treatments<sup>1</sup>; and therefore the main question of our research was broken down to see if there is any significant differences between the effects of the world practice through controlled oral production and controlled writing (CO and CW hereafter) on the Iranian EFL learners' performances on word meaning remembrance tests administered:

- **24 hours** after the end of the treatment period.
- **one week** after the end of the treatment period.
- **one month** after the end of the treatment period.

We selected fifty-five male and female students from the EFL students of Kashan University, Iran, to serve as the participants of this study. All these learners were second semester students with English as their major. These students were then divided into two groups: twenty-seven comprised the first class and twenty-eight comprised the other. These two classes served as the two experimental groups whose homogeneity was approved by a 90-item Michigan test of language proficiency.

After homogenizing the two classes and to be sure that the target words to be taught in the treatments are all new to the learners a checklist of 150 words was designed and administered among the students who were asked to write the meaning

of the words they may know. After administering the vocabulary test, there remained about 100 word items with which were unfamiliar to the subjects. Then different exercises were prepared for the two experimental groups, practicing same words (ten per session) were in a different way in each group, i.e. through controlled oral production exercises for the CO group and through controlled writing exercises<sup>2</sup> for CW group. The treatment encompassed four weeks of instruction: ten sessions of an hour each. And during each session the exercises were used to expose the students to new vocabulary as well as to provide them with an opportunity to practice

2. The **controlled oral production** exercises developed by the researcher include:

**1. Sentence Construction exercise:**

Example: Use each group of words in meaningful sentence orally. Add more information to your sentences.  
both generations- reconcile- differences

**2) Giving comments on the given situation:** in this exercise the students were supposed to read about a challenging situation described in a short paragraph first, then to comment on it, using the target words learned before.

**3) Discussing the conflicting opinions:** in this exercise two different opinions on a challenging topic were presented to the students. Then they were asked to support one and to use the target words in their discussion.

**4) Question-answer drills:**

Example: Answer the following questions orally. Use the underlined words in your answers.  
How can the old and the new generations reconcile their differences?

The **controlled writing exercises** include:

**1) Sentence Construction exercise:** This exercise was similar to that one under the same name for CO group except that the students in CW group had to practice the newly learned vocabulary in writing.

**2) Simple substitution exercise:** In this exercise, the students were supposed to rewrite the paragraph(s) using the target lexical items learned before in blanks.

**3) Correlative substitution frames:** In this exercise the students needed to rewrite the sentences changing all or a great part of them in order to use the target words.

Example: Rewrite the following sentences using the new words.  
We finally agreed on our differences.

**4) Sentence sense exercise:** in this exercise the students were given a passage written in short scrambled sentences, and they were asked to rewrite the linked sentences as one paragraph.

1. The decision about this pattern of testing the subjects' performance was based on the arguments about the nature of forgetting and the memory schedule presented by Russell (1979, cited in Schmitt, 1997; and O'Dell, 1997). It is argued that most forgetting occurs soon after the end of a learning session. And after this major loss, the rate of forgetting slows (Schmitt, 1997). Therefore, in order to become sensitive to the plateau (i.e., a state of memory with little or no change) following a period of rapid forgetting, we should test the learners' performance soon after their learning, and then at gradually increasing intervals. Russell's memory schedule is in line with these arguments. He proposes the administration of testing occasions 24 hours, one week, and finally one month after the learning period.

the new words. Following the treatment period, the subjects' ability to remember word meaning in each group was tested on three different occasions: about 24 hours after the end of the treatment period, then one week later, and finally after one month. And at the end, the students' responses to each word were scored either 1 or 0, then the performance of the students on each type of test and on the three occasions were scored out of 100, and were statistically calculated. The accumulated scores were later analyzed through independent T-tests.

### 3. Results

To accept or reject the null hypotheses based on the three questions of the study, the data obtained thorough the three post-tests were analyzed. The descriptive statistics for the first posttest is given in Table 2.

**Table 2** Descriptive statistics for test 1  
(test administered 24 hours after the treatment)

	<b>GROU P</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std.Error Mean</b>
<b>Test 1</b>	<b>CO</b>	<b>70.67</b>	13.82	2.61
	<b>CW</b>	<b>70.66</b>	16.93	3.25

As shown, the mean scores of the two tests are approximately the same. And the results of the T-test, shown in Table 3, indicate that with a p-value of .998, the difference between the two means was not significant. Therefore, with a 95 percent probability, it may be claimed that there is not a statistically significant difference between the effects of the two types of CO and CW exercises on the performance of our L2 learners in their vocabulary acquisition attempts.

**Table 3** T-test for test 1  
(test administered 24 hours after the treatment)

		<b>t-test for Equality of Means</b>		
		t	df	Sig. (2-tailed)
<b>Test 1</b>	<b>Equal variances assumed</b>	.003	53	<b>.998</b>

Table 4 shows the mean scores of the students on the second test (i.e., the test administered one week after the treatment). Here, there seems to be a little difference between the two means while the results of the t-test (Table 5) reveal that this

difference is not statistically significant ( $p = .683 \geq 0.05$ ), therefore with a 95% confidence we can concluded that the two exercises types exert the same influences here, as well.

**Table 4** Descriptive statistics for test 2

(test administered one week after the treatment)

	GROUP	Mean	Std. Deviation	Std. Error Mean
<b>Test 2</b>	<b>CO</b>	<b>49</b>	10.95	2.06
	<b>CW</b>	<b>47.77</b>	11.14	2.14

**Table 5** T-test for test 2 (test administered one week after the treatment)

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
<b>Test 2</b>	<b>Equal variances assumed</b>	.41	53	<b>.683</b>

Finally, we administered the third test one month after the treatment to see if the long term effect of the treatments vary from each other. The results obtained from this test are indicated in Table 6; and as seen the mean scores have a difference of about 9. 24. When a T-test was performed, the findings (shown in Table 7) indicated a statistically significant difference

between the mean scores of CO and CW groups ( $p = .001 \leq .05$ ). Therefore, it can safely be concluded that there is a significant difference between practicing words through CW and through CO exercises in respect to their effect on students' ability to remember word meanings about one month after the treatment.

**Table 6** Descriptive statistics for test 3

(test administered one month after the treatment)

	GROUP	Mean	Std. Deviation	Std. Error Mean
<b>Test 3</b>	<b>CO</b>	<b>37.71</b>	9.45	1.78
	<b>CW</b>	<b>28.44</b>	9.45	1.81

**Table 7** T-test for test 3

(test administered one month after the treatment)

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
<b>Test 3</b>	<b>equal variances assumed</b>	3.63	53	<b>.001</b>

In sum, the *between-group* comparisons show that controlled oral production exercises help students remember the meaning of the words better, not necessarily immediately after the practice, but over a longer time- i.e., about one month.

To have a better picture on the two exercise types, we compared the with-in-group scores, as well. These comparisons and the application of within subject ANOVA showed, as expected, that the decline in word meaning remembrance was significant in both groups (see Tables 8 and 9).

**Table 8** Mauchly's Test of Sphericity for CW group

	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon
<b>Within Subjects Effect</b>					Greenhouse- Geisser
<b>decline</b>	.779	6.231	2	<b>.044</b>	.819

**Table 9** Mauchly's Test of Sphericity for CO group

	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon
<b>Within Subjects Effect</b>					Greenhouse- Geisser
<b>decline</b>	.630	11.994	2	<b>.002</b>	.730

In order the spot where this meaningful difference lies- between test 1 and test 2 or between test 2 and test 3- a comparative analysis was made among the three means in

each group, and the results showed that in each group the difference between the means for T1 and T2, and T2 and T3 is significant (see Tables 10 and 11).

**Table 10** Paired Samples Test for CW Group

		Paired differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
<b>Pair 1</b>	<b>Test1-Test2</b>	22.8	11.05	10.7	26	<b>.000</b>
<b>Pair 3</b>	<b>Test2-Test3</b>	19.3	9.43	10.6	26	<b>.000</b>

Table 11 Paired Samples Test for CO Group

		Paired differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
<b>Pair 1</b>	<b>Test1-Test2</b>	21.6	9.06	12.6	27	<b>.000</b>
<b>Pair 3</b>	<b>Test2-Test3</b>	11.3	5.26	11.3	27	<b>.000</b>

These peripheral findings emphasize the disappointing decline in word meaning remembrance over time, no matter what treatment (CW or CO exercises) is used. However, the CW group shows more decline between tests 2 and 3 with a mean of 19.3 compared to a decline of 11.3 for the CO group, while their behavior in the tests 1 and 2 is not that different.

Over all, the results of this study show that in spite of the disappointing decline of word meaning remembrance in both groups, practicing words through CO exercises has propriety over CW exercises on the ground that the CO group remembered more word meanings over time.

#### 4. Discussion

The results of this study can be discussed in the potential framework of **DOPH** (Depth Of Processing Hypothesis) which has proved to be widely influential in L2 vocabulary acquisition discussions. The central idea of DOPH is that “the deeper” analysis of a stimulus leads to a more persistent memory trace, with ‘depth’ referring to a greater degree of semantic involvement” (Segler, 2001: 23). In other words, the more cognitive energy a person expands when manipulating and thinking about a word, the more likely they will be able to remember and use it later. The implications

extend to pedagogy, suggesting, “exercises which involve a deeper engagement with words should lead to higher retention than “shallower activities” (N. Schmitt and McCarthy, 1997: 3).

There are some arguments in the literature about the characteristic disparities between writing and speech, and the processes involved in each. We may expect these disparities to lead to a different depth of processing in each.

One of these characteristic differences is related to the fact that in ‘*writing exercises*’ there is “more planning time” and “more processing capacity” available (Skehan, 1998: 67-72). The results of this study show that having ‘more planning time’ and the existence of ‘more processing capacity’ in writing exercises necessarily does not lead to the expense of more cognitive energy or a greater thinking about a word. As a result, it does not guarantee a deeper and more permanent memory trace. In sum, these results show that the deeper levels of processing do not necessarily take longer to accomplish than the shallower levels. Generally, it is not the time itself but the depth of processing that is important.

The unique characteristics of *speech*, on the other hand, may be the reasons for the occurrence of more thinking on words and deeper semantic involvement in controlled oral production



exercises in comparison with controlled writing exercises. These striking features are namely: a “more meaningful context provided by speech” assisting remembering new words (Nation and Newton, 1997, in Coady and Huckin: 238); “the occurrence of repetition in more meaningful context improving durability of word learning” (ibid.); the existence of “immediate feedback from individuals to whom message is directed” (Ellis and Beattie, 1986:200); “distinct role of repetition and lexical negotiation” (McCarthy and Carter, 1997, in Schmitt and McCarthy: 34); and “lexical variation or relexicalization” (ibid., 34-5).

Here, what we wish to argue is that these unique characteristics of speech, which are the very stuff of oral production exercises incorporated in this study, may be the main reasons for more semantic involvement and deeper memory trace in learners. However, question arises as whether writing is deprived of features like ‘repetition’ and ‘relexicalization’. To provide an answer we shall be focusing more on the recent insights into spoken language.

For example, the studies by McCarthy and Carter (1997) show that although repetition occurs in both writing and oral productions, it is necessary to consider the fact that in spoken language, it can occur both within the turn of the learner and across learners’ turn. In other words, in speech the speakers may repeat their own words for a variety of reasons, and this repetition also occurs across speaker domain for similar reasons. This taking up of one’s own and others’ lexis in exact repetition and in various class forms (head noun, adverb, adjective, noun

modifier, ...) is almost absent in writing, at least at across-speakers’ boundaries.

In addition, in oral production, as noted by McCarthy and Carter (1997, in Schmitt and McCarthy: 34), lexical variation or relexicalization often occurs, where words are reiterated either in the form of paraphrase or alternative lexical (near-synonymous) forms. They argue that although such patterning of words undoubtedly occurs in written form too, in oral production there is a more vivid context in which we witness the interpersonal aspects of lexis at work, and a more rewarding place for the occurrence of this lexical variation across the learners.

Above all, considering these unique characteristics of speech are in fact the very stuff of oral production exercises, we can guess that they can result in more semantic involvement and processing of the words both in breadth and depth. In other words, these striking features result in larger average of depth of processing (in comparison with CW exercises), and to a more persistent memory trace, which is needed to retain the words in the memory for a longer period of time.

To put it metaphorically, we can say that these outstanding features make the words penetrate more as they flow over the learners’ mind and sink in more and remain longer into the depth, and evaporate almost later.

## 5. Implications

The findings from the present study, however, do not imply that we should dismiss the use of controlled writing exercises, rather to see both

productive exercises as complementary. Considering the immediate and over time benefits of each type of these exercises, what we should move towards is an attempt to combine them in such a way that provides the maximum results. Or we should consider the ways of maintaining the controlled writing exercises, while also ensuring that a depth of word processing occurs.

Therefore, teachers and textbook writers should take advantage of the benefits inherent in both types of productive exercises and specially the long-term benefit of controlled oral exercises to provide the accompanying exercises which engage learners on deeper levels of word processing as they practice vocabulary.

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## نوع تمرین زبانی و یاد آوری معانی کلمات

رضا غفارثمر<sup>۱</sup>، غلامرضا کیانی<sup>۲</sup>، محمد رحیمی<sup>۳</sup>

از سؤالاتی که اغلب ذهن گیرندگان و معلمان زبان را به خود مشغول می‌کند می‌توان به چگونگی یادگیری واژگان یک زبان خارجی و چگونگی حفظ یاد گرفته‌ها در حافظه اشاره کرد. در این مقاله تلاش می‌شود تا تأثیر دو نوع عمده از تمرینهای یادگیری لغت یعنی تمرینهای تولیدی - نوشتاری و تولیدی- گفتاری را بر یادگیری معانی لغتها کشف کرده و نیز آثار این دو رویکرد را در کوتاه مدت (۲۴ ساعت و یک هفته) و در بلند مدت (یک ماه) بر یادآوری معانی لغات بررسی کنیم. بدین منظور دو گروه همگون از زبان آموزان زبان انگلیسی به عنوان زبان دوم انتخاب و به مدت ۱۰ هفته در معرض آموزش حدود ۱۰۰ کلمه جدید زبانی با استفاده از روشهای دوگانه فوق قرار گرفتند. یافته‌های مطالعه بر تأثیر بیشتر تمرینهای تولیدی- گفتاری بر یادآوری بلند مدت معانی کلمات دلالت دارد. در حالی که هر دو روش تأثیر یکسانی در کوتاه مدت از خود نشان دادند.

واژگان کلیدی: نوع تمرین، یادآوری معنای لغت، تمرینات نوشتاری و شفاهی

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۱. استادیار دانشگاه تربیت مدرس

۲. دانشیار دانشگاه تربیت مدرس

۳. دانشجوی کارشناسی ارشد