Word Type Effects on L2 Word Retrieval and Learning: Homonym versus Synonym Vocabulary Instruction

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Abstract

The purpose of this study was twofold: (a) to assess the retention of two word types (synonyms and homonyms) in the short term memory, and (b) to investigate the effect of these word types on word learning by asking learners to learn their Persian meanings. A total of 73 Iranian language learners studying English translation participated in the study. For the first purpose, 36 freshmen from an intact class were presented with two lists of words with their Persian meanings. One of the lists included 5 pairs of synonyms and the other one included 5 pairs of homonyms. They were asked to retain as much vocabulary items as they can. Learning was measured by lexical representations of the words. The results showed the learners did better on the retention of homonyms than synonyms. For the second purpose, 37 sophomores from an intact class were provided with 40 words in pairs (20 synonyms and 20 homonyms). They were asked to write their Persian meanings in the testing session. The results indicated the students did better on learning synonyms than homonyms. The study revealed that homonyms are better retrieved in short term memory but learned more slowly regarding to the semantic representation.

1. Introduction

Vocabulary learning is a key to foreign language (FL/L2) learning (Schmitt, 2008). Due to the importance and complexity of vocabulary acquisition, theorizers and practitioners in the field of language pedagogy have always tried to find the best ways of mastering vocabulary knowledge. Anything related to vocabulary knowledge and vocabulary learning including components of vocabulary knowledge, number of words essential to be learned by language learners, reciprocal relations between vocabulary and reading, incidental vs. intentional learning and etc. have always been addressed by different researchers. The importance of vocabulary learning and the researchers' interest in this field have led into having a considerable research literature on vocabulary and acquisition (Tinkham, 1993; Huckin and Coady, 1999; Nation, 2001; Barcroft, 2007; Webb, 2007; Keating, 2008; Peters, Hulstijn, Sercu and Lutjeharms, 2009; Pellicer-Sánchez and Schmitt, 2010) and also devising a large bulk of textbooks and materials (eg. MacCarthy and O'Dell, 2002; Levine, Levine and Levine, 2003 and 2005; Nation, 2009).

Vocabulary consists of two main elements, form and meaning, and establishing form-meaning link is the first and the most important step in gaining vocabulary knowledge. Form learning is not, in contrast with what is commonly believed, less important than meaning learning, (Laufer, 1988; Koda, 1997), especially for L2 learners, trying to learn the meanings of new words. Form represents two main features including spelling and pronunciation. Learning these two features- orthographical and phonological aspects has proved to be difficult (e.g., Cutler and Norris, 1988; Laufer, 1988; Koda, 1997; Barcroft, 2002; De Groot, 2006). Since L2 is a new language and different from learners' L1, learners need to have special attention to word

forms in order to learn their specific morphemes and spelling and the way they combine and cluster (Schmitt, 2008).

Similarity of lexical form is called synform (Laufer, 1988 and Civikic, 2007). They may be words which are similar in their sounds but different in their meanings (homonym), eg. *'live'* and *'leave'*, or they may be similar in their spellings or scripts, such as *'excerpt'* and *'expert'* or they may be only different in their suffixes, such as *'comprehensive'* and *'comprehension'*.

die/dye   sew/so/sow   board/bored   taut/taught

Homonyms are words that are pronounced alike and have different spellings, eg. *'no'* and *'know'* are homonyms, or words that are spelled alike but have different meanings.

However, homonym is a word that sounds the same as another word but has a different meaning, eg. 'Bow' *(=to bend your head or body to show respect)* and 'Bow' *(= a weapon used for shooting arrows)*. In the present study we are concerned with homonym that sounds the same as another word but has a different meaning.

2. Literature Review

A number of researchers addressed homonyms and the effects of homonyms on word learning in their studies. They investigated homonym learning in different contexts and with learners at different ages. The studies mainly focus on the tasks of semantic and lexical form/representation. Two opposing theories are the end product of the related studies:

A. Homonym facilitates word learning by decreasing the amount of new information- one lexical form for two semantic representations/meanings. They say that homonyms are known words at the level of form and are easier to learn and retain.

B. Homonyms are learned more slowly than other/novel words because homonyms may increase the cognitive demands, and learning the appropriate form-referent association requires more evidence or external support.

Mazzocco (1997), hypothesizes, according to his findings, that learning homonyms is more demanding for children and they may learn homonyms more slowly than new words. Doherty (2000) holds that children learn homonyms more slowly than other/novel words because homonyms may increase the cognitive demands. Mazzocco, Meyers, Thompson, and Desai, (2003) and Doherty (2004), also believe that for children of 3-9 years, learning homonyms is more difficult than new words. That is, they have difficulty in creating a semantic association between homonyms.

Storkel and Maekawa (2005), focusing on pre-literate children, compared homonym learning to novel-word learning by 3-4 year-old children. Their aim was to determine whether homonyms are learned more rapidly or more slowly than novel-words. After exposing the participants to homonyms or novel words in a story with visual support, the learners were asked to: (a) Identify the referents for novel words and homonyms (semantic representation). The results showed that they equally did on semantic representation task with the same degree of accuracy. That is, they identified homonyms as accurate as novel-words; (b) name pictures (lexical representation) that they were more accurate in naming homonyms than novel words. They also found that pictures of homonyms composing common sound sequences were easier to name. Thus, phonotactic probability -form characteristics- plays an important role in homonym learning. According to the findings of their study, they held that "homonym learning is similar to novel word learning when learning is measured by tasks emphasizing semantic representations. In contrast

homonym learning appears to facilitate word learning when learning is measured by tasks emphasizing lexical representation" (p. 13).

Regarding L1 learning, the authors, based on the findings of a few studies investigating homonym learning by children, hypothesized that homonyms are easier to learn because they reduce the cognitive demand by "reducing the amount of new information that must be represented in the mental lexicon" (p. 2). That is, the lexical representation is the same and a child needs only to create two semantic representations and association between the two semantic representations with the same lexical form.

As the aim of the present study is to compare the retention of two word types (Homonyms and Synonyms) in the short term memory and learning their Persian meanings in sense of semantic representation, it proves to be necessary to review the related literature. The results of studies provide us with mixed conclusions.

Finkbeiner and Nicol (2003), investigated the effectiveness of presenting new L2 words in semantically grouped sets. In their study, the participants learned new labels for familiar concepts (training phase), and then they were required to retrieve those labels in a translation task (testing phase). The test phase included both L1–L2 translation and vice-versa. They found that presenting semantically grouped L2 words to learners has a deleterious effect on learning because translation times were significantly slower for words learned in semantic sets versus in random orders and translation performance was negatively affected by presenting the words to be translated in semantic categories. According to the findings, they concluded "that teaching words in semantic sets creates competition between items, which in turn increases difficulty during learning and during memory retrieval in language production" (p. 379). They argue that there are two possibilities: (1) Words presented in

semantically groups take longer to be learned but are easier to retrieve in language use phase; and, (2) Semantically related words takes longer to learn and are difficult to be retrieved for language use.

Kroll and Stewart (1994), hold that Semantically related words are difficult for translation from L1 (Dutch) to L2 (English). Tinkham (1997), comparing the effect of thematic and unrelated words, found that presenting words in thematic cluster can facilitate word learning than presenting words in categorical and unrelated word clusters. Gairns and Redman (1986) and Seal (1991) believe that presenting words in semantic or grouping them by meaning reinforce vocabulary learning and helps learners understand the words by noticing on their subtle differences. Hoshino (2010) investigated the relative effectiveness of five types of word lists (synonyms, antonyms, categorical, thematic, and arbitrary) in facilitating L2 vocabulary learning in a classroom setting. Comparing the effectiveness of the type of word lists on learners, he concluded that "Within a classroom setting, this study makes it clear that presenting new vocabulary in categorical lists promotes vocabulary learning" (p. 310). Tinkham (1993) and Waring (1997) found that presenting words in categorical word form does not facilitate vocabulary learning.

Hashemi and Gowdasiaei (2005), also addressed this issue in their study. The purpose of their study was to compare the effectiveness of the lexical-set (LS) and the semantically-unrelated (SU) vocabulary instruction, and to assess the differential effects of the two methods for students of lower and upper English proficiency levels. They concluded that presenting words in lexical sets can facilitate word learning. They presented two theories: (1) using lexically set method facilitate learning by helping learners to form association between newly and already learned words; and, (2) By LS, learners can set a lexical domain and are more likely to learn another member of that domain.

Although a number of studies on vocabulary learning and retention have addressed learning synonyms and homonyms and contributed to a better understanding of vocabulary learning and instruction, such studies have a few limitations. First, the studies were mainly investigating the retention and learning of two word types by young and preliterate children. The studies on semantically related words addressed the known concepts and no study examined the retention and learning of both word types at the same time with the same learners. Addressing the shortcomings of the past studies on learning and retention of two word types, the present study aims to answer the following research questions:

1. Are homonyms retrieved better than synonyms in the short term memory?
2. Are Persian meanings of homonyms learned better than those of synonyms?

3. Method

3.1. Participants

A total of 73 language learners participated in this study. For the first experiment 36 university students, from one intact class, studying English Translation as their major at the University of Zabol participated in this study. They were 36 freshmen (male, 11 and female 25) from different language backgrounds (they spoke different languages as their mother tongues eg. Turkish, Kurdish, Arabic; and various Persian dialects eg. Khorasani, Sistani, etc.) ranging from 18 to 25 in age.

Subjects of the second experiment were 37 language learners from an intact class, studying English Translation as their major. They were male (25) and female (12) sophomore again from different language backgrounds (speaking

different languages and Persian dialects as their mother tongues) ranging from 18 to 25 in age.

3.2. Instrumentation

The present study included two experiments to fulfill its purposes. In the first experiment, aming at examining the retention of two word types (synonym and antonym) in short term memory, 20 vocabulary items including ten pairs were prepared for both word types, 5 pairs for each. Five of these pairs consisted of synonyms and other five pairs consisted of homonyms. Since synonyms mostly are adjectives and verbs, homonyms, though limited in number, are nouns, verbs or adjectives, it was impossible to control for word class. That is, all the vocabulary items do not belong to the same class, say noun, verb, adjective or adverb.

The vocabulary items of both word types were controlled for the number of the syllables in the sense that all words consisted of one or two syllables and only one pair of each word types consisted of 3 syllables.

Table 1. Distribution of words based on the number of syllables

	Synonyms	Homonyms
One syllable word	2	6
Two syllable word	6	2
Three syllable word	2	2
Total	10	10

Each synonym or homonym relationship was established by two words because this is common for both synonyms and homonyms. That is, for each word type the relationship between words is usually formed by two words that have identical meanings (synonyms) or pronunciations (homonym).

The new words which the participants have no knowledge about were chosen. To make sure that the words are new to the students, they were administered to 15 students at the same level of proficiency. Learners were required to say whether they know or have no knowledge of the vocabulary items, answering a vocabulary knowledge scale containing 3 points.

Table 2. Vocabulary knowledge scale

I have never seen this word before.
I have seen this word before but I can't remember its meaning. Or I know its meaning, it means _____.

All the students marked (0) meaning that the words were new to them and they had no knowledge about them. Six university instructors were used to confirm the particular relationship (synonym or homonym) between each pair of words.

Table 3. Distribution of words based on the number of syllables

	Synonyms	Homonyms
One syllable words	6	7
Two syllable words	11	11
Three syllable words	3	2
Total	20	20

For the second experiment, aiming at scrutinizing the learning of synonyms and homonyms, a total of forty words containing 10 pairs of synonyms and 10 pairs of homonyms were prepared. The words of both word types were controlled for syllable length in the sense that they were either identical or different only in one syllable. The words of 10 pairs (5 pairs of synonyms and 5 pairs of homonyms) were identical in the number of syllables. Other ten pairs

included 3 words with the same number of syllables and one word with one syllable more or fewer (See Table 3).

3.3. Procedures

Each experiment of the study consisted of learning and testing phases. The purpose of the 1st learning and testing sessions was to examine the retention of two word types in the short term memory, and that of the 2nd experiment was to investigate the learning of Persian meanings of two word types.

3.3.1. First Experiment

In the first learning session, students were provided with a list of words consisted of 20 words- 10 pairs, including 5 pairs synonym, and 5 pairs homonyms. The words were presented in pairs. The sets of words were administered with the order SI- HI, S2- H2, S3- H3, S4-H4, S5-H5 to minimize the effects of tedium on the results. Each set was presented to the subjects for 15 seconds. The total time allocated to the learners was around 3 minutes to memorize (See Appendix 1. Table 1).

After the first learning session, there was a 10-second delay time during which the subjects were supposed to do nothing but to wait. The purpose of this delay time was to allow for some forgetting to occur and for purposes of ease of administration. Then, one minute recall time was allowed for the students to write down as many words as they remembered. Later on, the number of words were counted and recorded. During the counting phase, minor spelling errors were ignored whereas the wrong words were excluded from counting.

3.3.2. Second Experiment

In the learning session of the second experiment, students were provided with a list of words consisting of 40 words- 20 pairs including 10 pairs synonym and 10 pairs homonyms. The words were presented in pairs plus their Persian meanings. The Persian translation of each word was presented in a table and the instructor pronounced the vocabulary items for the learners (See Appendix A. Table 2).

Since learning was to be measured only by correct Persian meanings, the learners were told that their task is to learn the Persian meanings of the English target words. The allocated time for learning was 24 hours before the testing session. They could take the list to their homes and use their favorite strategies and techniques of learning.

In the testing session of the second experiment, the participants were required to write the correct Persian meanings of the English target words. The answers were correct as long as the Persian meanings were correct. In this testing session, the vocabulary items were administered in a list. The vocabulary list contained all 40 words including both word types. The order of words in the testing list was different from that of the list presented in learning session (See Appendix B. Table 1). This was done in order to avoid the possibility of answering simply by memorizing the order of Persian words. The allocated time to the test takers was 5 minutes for the list.

4. Results

The purpose of the present study was twofold: (a) to investigate the retention of two word types in the short-term memory, and (b) to examine the learning of

word meaning of two word types. In the following section, a detailed analysis of the results will be presented and discussed.

Table 4. Descriptive Statistics: Scores on word retention in the short term memory

	Synonym	Homonym
Mean	5.3056	6.1667
Std. Error of Mean	.28680	.29681
Median	5.5000	6.0000
Mode	7.00	7.00
Std. Deviation	1.72079	1.78085
Variance	2.961	3.171
Range	7.00	7.00
Minimum	2.00	3.00
Maximum	9.00	10.00

4.1. First Experiment Measures

As the purpose of the first experiment was to examine the retention of two word types in the short-term memory, the scores of students on the list of homonyms and synonyms were obtained and assessed using Spss for windows (see Table 4.). To assess reliability, Cronbach's α was calculated for the test of the first experiment as 0.71 suggesting an acceptable reliability. Looking at the table, it can be found that the mean score of the learners on homonyms is higher than their mean score on synonyms. In order to see whether this difference is statistically significant, One- sample t-test (Table 5) was measured using Spss for windows. The results indicated that there is a statistically significant difference between the mean score for synonyms and homonyms

(t=30.44, p=.000, df=36). In other words, learners have a statistically significantly higher mean score on homonyms (6.16) than synonyms (5.30).

Table 5. One-sample test for short-term memory test

	Test Value = 0					
					95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean difference	Lower	Upper
Synonym	18.499	35	.000	5.30556	4.7233	5.8878
Homonym	20.777	35	.000	6.16667	5.5641	6.7692

4.2. Second Experiment Measures

The purpose of the second experiment was to examine the effectiveness of list of two word types on vocabulary learning. After administering the test list, the scores of the learners on homonyms and synonyms were obtained and the statistical data was measured using Spss for windows. (Table 6). Cronbach's α was calculated for the test and the result was 0.92 which suggests a sufficient reliability.

Table 6. Descriptive statistics: scores on learning Persian meanings

	Synonym	Homonym
Mean	16.2973	13.7297
Std. Error of Mean	.53534	.58976
Std. Deviation	3.25632	3.58739
Variance	10.604	12.869
Range	14.00	16.00
Minimum	6.00	4.00
Maximum	20.00	20.00

The data presented in the above table shows that the mean score of the learners on two word types was different. To assess that the difference between the mean scores is statistically significant, One-sample T-test was calculated (Table 7). The results indicate that the difference between the mean scores for synonyms and homonyms is statistically significant (t= 30.44, p= .000, df= 36). In other words, learners have a statistically significantly higher mean score on synonyms (16.29) than homonyms (13.72).

Table 7. One-sample test for learning test

	Test Value = 0					
					95% Confidence interval of the difference	
	t	df	Sig. (2-tailed)	Mean difference	Lower	Upper
Synonym	30.443	36	.000	16.29730	15.2116	17.3830
Homonym	23.280	36	.000	13.72973	12.5336	14.9258

5. Discussion

The statistical measurements indicated the learners did better on the retention of homonyms rather than synonyms in short term memory. Hence, it can be said that homonyms facilitate word retention in short term memory by decreasing the amount of new information. That is, a single lexical form is used for two semantic representations. For the first experiment, the findings did not match those of some studies on homonym learning eg. Mazzocco (1997), Dohorty (2000), Mazzocco, Meyers, Thompson, and Desai, (2003) and Doherty (2004) believing that creating semantic associations between homonyms is more difficult. According to the findings of the present study, it can be held

that once form is learned for the first word of the pairs, homonyms become known words at the level of form and are easier to retain in short term memory. This idea is in line with the notion of Storkel and Maekawa (2005) intending that "homonym learning appears to facilitate word learning when learning is measured by tasks emphasizing lexical representation" (p. 13).

One of the factors critical to word learning which is not tested in the present study is retention of homonyms and synonyms in the long term memory. Further study is required to examine the retention of these two word types in the long term memory.

For the second experiment, the findings didn't support the conclusions made by Finkbeiner and Nicol (2003), Tinkham (1993, 1997), Kroll and Stewart (1994) and Waring (1997) holding that presenting semantically grouped L2 words to learners has a deleterious effect on word learning. The learners, in the present study, did better on learning Persian meanings of synonyms than those of homonyms. Unlike the first experiment which examined the retention of words focusing on lexical representation (form) of words, the second experiment focused on the semantic representation of the words. That is, in the first experiment, learning meant retention of the lexical forms of vocabulary items of both word types, but the second experiment focused on the semantic representation and examined the learning of the Persian meanings of the words. Since learning was measured by writing the Persian meanings of the word pairs, synonyms could facilitate learning by reducing the cognitive demand. Accordingly, it was easier for students to establish the appropriate form-meaning association. Once the meanings of the first words of the synonym pairs was learned, it becomes known information and reduces the amount of information that must be learned by learners and it can make a bridge from known to unknown. This can be in accordance with Dohorty's

(2000) and Seal's (1991) notion that homonyms make learning words difficult by increasing the cognitive demands.

6. Conclusion and Pedagogical Implications

This study revealed that presenting homonym word pairs facilitate word retrieval in short term memory by decreasing the cognitive demands. If presented together, homonym pairs can be retrieved faster because their lexical forms are similar. This conclusion supports the findings of Sterkel and Maekawa (2005). Learners, teachers, and material designers can make use of homonym pairs whenever the focus is on the short term memory and word form.

The second experiment revealed that when learning is measured by semantic representations, synonyms can facilitate word learning by decreasing cognitive demands as the meanings of the words are identical for synonym pairs. Accordingly, practitioners in the field of language teaching can cluster the words with the same meaning for a better understanding. In other words, if the focus is shifted towards the semantic learning aspects, synonym pairs would be more fruitful.

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Appendix A

Table 1. 20-Item vocabulary list

S1	1. grudge 2. resent	H1	11. ascent 12. assent
S2	3. forgo 4. waive	H2	13. bate 14. bait
S3	5. belittle 6. disparage	H3	15. complacent 16. complaisant
S4	7. dawdle 8. loiter	H4	17. elude 18. illude
S5	9. novice 10. tyro	H5	19. reign 20. rein

Table 2. 40-Item Vocabulary List

Pair 1	1. incisive 2. trenchant	نافذ و قاطع	Pair 11	21. suede 22. swayed	چرم جیر تاب خورده
Pair 2	3. gauche 4. clumsy	خام دست، نا آزموده	Pair 12	23. beau 24. bow	مرد خوش تیپ کمان
Pair 3	5. intrepid 6. dauntless	نترس، شجاع	Pair 13	25. borough 26. burro	دهکده سوراخ زیر زمینی
Pair 4	7. placate 8. assuage	آرام کردن، تسکین دادن	Pair 14	27. cygnet 28. signet	جوجه قو مهر
Pair 5	9. winding 10. sinuous	پر پیچ و خم	Pair 15	29. discreet 30. discrete	با احتیاط با خرد جدا، مجزا
Pair 6	11. thrifty 12. frugal	صرف جو	Pair 16	31. incite 32. insight	اغوا کردن بینش، بصرت
Pair 7	13. roam 14. vagabond	بی هدف پرسه زدن	Pair 17	33. moose 34. mouss	گوزن دسر خامه
Pair 8	15. tumult 16. ommotion	سرو صدا و شلوغی زیاد	Pair 18	35. ordinance 36. ordnance	حکم، فرمان توپخانه نظامی
Pair 9	17. banal 18. trite	کسالت آور و معمولی	Pair 19	37. vale 38. veil	دره نقاب
Pair 10	19. counterfeit 20. bogus	جعلی	Pair 20	39. overdo 40. overdue	به حد افراط رساندن معوق، به تعویق افتاد

Appendix B

Table 1. List of words used for the testing session

Row	Words	Persian meanings	Row	Words	Persian meanings
1.	placate		21.	swayed	
2.	mousse		22.	counterfeit	
3.	ordinance		23.	trite	
4.	commotion		24.	incisive	
5.	bow		25.	cygnet	
6.	banal		26.	frugal	
7.	overdo		27.	clumsy	
8.	veil		28.	suede	
9.	sinuous		29.	dauntless	
10.	bogus		30.	beau	
11.	overdue		31.	thrifty	
12.	trenchant		32.	incite	
13.	gauche		33.	moose	
14.	burrow		34.	intrepid	
15.	tumult		35.	vale	
16.	assuage		36.	insight	
17.	signet		37.	ordnance	
18.	winding		38.	vagabond	
19.	borough		39.	discrete	
20.	discreet		40.	roam	