

## Sex differences in english vocabulary learning through the keyword method, the case of Iranian EFL learners

Mona Emami Pana \*, Akbar Afghari

*Department of Foreign Languages Isfahan (Khorasgan) Branch, Islamic Azad University, Isfahan, Iran*

---

**Abstract:** This study was set out to determine whether there are significant differences between male and female EFL learners through the application of the keyword method in the classroom. Totally, 90 intermediate-level EFL male and female learners (in three groups, two experimental and one control group), participated in this study. Intermediate-level EFL learners were selected using the Jihad Daneshgahi institution placement test. The experimental groups received the keyword strategy training while the control group went through the conventional process of vocabulary learning. In the experimental group (1) the keywords were provided by the teacher while the learners in the experimental group (2) provided the keywords on their own. For data collection, a pre-test and an immediate posttest were conducted. The statistical measures used and applied to the data were descriptive statistics, T-Test and UNOVA. A quantitative analysis of vocabulary pretest and vocabulary immediate posttest scores was conducted. The findings from the univariate analysis of variance and the T-Test revealed that male and females did not perform differently while applying the keyword method and there was not a statistically significant difference between them. Moreover, there was not a statistically significant difference between male and female language learners in the keyword-given and the keyword-generated groups.

**Key words:** Vocabulary retention; Mnemonic strategies; Keyword method

---

### 1. Introduction

#### 1.1. Review of literature

There are many factors affecting the process of language acquisition, biological and social factors, as well as interactions between the two. One biological factor in language development appears to be gender. The differences between the male and the female brain indicate a different aspect to look at the relationship between human brain and language. In this respect, females seem a bit more advantageous than males since the female brain structure enables them to perform better at linguistic tasks. From a very early age, girls tend to outperform boys in their language development, demonstrating a larger vocabulary as early as at 16 months of age (Bauer et al., 2002; Huttenlocher et al., 1991). Because of the gender differences on linguistic tasks, the mechanism of language acquisition may be somewhat distinct for males and females. Julé (2004) believes that "Anatomy is not destiny, as Freud suggested, but a learner's sex-or, more likely, gender- can have profound effects on the ways that learners approach language learning, ways which may in turn affect proficiency" (Julé, 2004).

According to Klein (2007) learning a foreign or second language is a complex process and research indicates that gender-based differences interact with this process. Female students complete their foreign

language courses at a higher rate than male students. According to statistics, 36% of females and 24% of males completed three or more years of foreign language courses. Also, female students appear to be performing better than their male counterparts on most national foreign language tests (Klein, 2007).

Over the years, many researchers have been interested in defining significant sex differences in cognitive abilities. Although there are no sex differences found in general intelligence, reliable differences are found on some tests of cognitive abilities. Many of the tasks that assess the ability to manipulate visual images in working memory tend to show an advantage for males, whereas many of the tasks that require retrieval from long-term memory and the acquisition and use of verbal information tend to show advantages for females (Halpern and LaMay, 2000).

Some studies informed by Schacter and Tulving's memory systems model (1994) have indicated gender differences in performance for episodic memory tasks (Herlitz, et al., 1997; Ionescu, 2000). In congruence with these studies, Lewin, Wolgers, and Herlitz (2001) reported that women have a higher verbal and nonverbal episodic memory score, whereas men tend to be better on visuospatial episodic memory tests (Postma et al., 2003). According to Kimura and Clarke (2002), women obtain better scores than men on most verbal memory tasks. This appears to be true whether the material is a list of words or a meaningful passage, it appears from childhood to old age and has been

---

\* Corresponding Author.

found across ethnic groups (Herlitz et al., 1997; Kimura, 1999). According to Herlitz and Rehnman (2008), women excelled in verbal episodic memory tasks, such as remembering words, objects, pictures or everyday events, and men outperformed women in remembering symbolic, non-linguistic information, known as visuospatial processing.

Having an inquiry on sex and instructional programs in the language classroom, Batters (1986) concluded that there are several elements that distinguish female learners from male ones. For example, Batters (1986) found that females spend more time on "attentive activities" than males. Attentive activities consist of "listening to the teacher, to the tape, to other classmates, observing and reading". Furthermore, males were better in "oral and participatory activities", such as "speaking to the teacher and to other learners in the foreign language, taking part in group work or demonstration and showing spontaneity (Batters, 1986)".

With the emergence of the concept of language learning strategies (LLS), many researchers have attempted to relate these strategies to language learning skills believing that each strategy enhances learning of vocabulary, pronunciation, etc. In this regard, it is claimed that most LLS are used for completion vocabulary learning tasks (O'Malley and Chamot, 1990; O'Malley et al., 1985).

Schmitt (1997) developed taxonomy of VLS based on the LLS taxonomy created by Oxford (1990). There are two main groups of strategies: discovery strategies and consolidation strategies. Discovery strategies are the strategies which are used in discovering the meaning of a new word whereas consolidating strategies deal with the consolidation of a word once it has been encountered. The former consists of determination strategies and social strategies, whereas the latter includes social strategies, memory strategies, cognitive strategies, and metacognitive strategies. Schmitt (1997) also maintains that memory strategies, traditionally known as mnemonics, are one type of consolidation strategies (Uster, 2008).

Mnemonics today are described as the art of improving or developing the memory especially by artificial aids (Hauptman, 2004). Mnemonics are memory-enhancing strategies that involve teaching students to link new information taught to information they already know (Amiryousefi and Ketabi, 2011).

Mnemonic devices are powerful tools for learning a foreign language. In the field of language learning, mnemonics has mostly been used for the learning of vocabulary. Mnemonics (memory techniques) and within it the Keyword Method is probably one of the best examined learning strategies for vocabulary teaching (Hauptmann, 2004).

Keyword method is a mnemonic technique that uses two links for the identification of a keyword: (a) an acoustic link; and (b) an imagery link. The keyword sounds like a part of the word to be learnt, and the imagery link is a visual image of the keyword

that interacts with the meaning of the word (Bruning et al., 1999). Modern mnemonic techniques are mainly based on the principles of recoding, relating and retrieving (Levin, 1983), the three Rs (Mastropieri and Scruggs, 1991).

Male and female learners are challenging to apply various vocabulary learning strategies for learning vocabulary. More research is needed in order to accurately describe the sex differences in VLS use. According to a study by Fan (2003) male and female students normally use the same strategies and are more alike than different. Yet, studies have shown that females often use a wider range of LLS than males. Moreover, females usually employ social strategies which promote communicative competence whereas males do not use social strategies actively. A summary of studies on sex differences also shows that male students use translation strategies more often than female students. Furthermore, Jimenez (2003) has identified that males and females differ significantly with regard to the number of VLS they use. In addition, female learners use VLS more often to promote their language learning in comparison with male learners. Besides, female learners use more formal rule strategies, input elicitation strategies, rehearsal strategies and planning strategies whereas male learners use more image vocabulary strategies. One of the main objectives of this research study was to see if male and female foreign language learners benefit equally from vocabulary recall when applying the keyword method.

## 2. Research questions

This study aimed to examine whether there is sex differences in English vocabulary learning through the keyword method in Iranian English language classrooms. The following research questions were investigated in this study:

1. Is there any difference between male and female EFL learners in learning foreign language vocabulary through the keyword method?
2. To what extent is the male EFL learner's performance in keyword-given group different from the keyword-generated group's performance?
3. To what extent do female language learners in keyword-given group perform differently from females in the keyword-generated group?

## 3. Methodology

### 3.1. Participants

A total of 90 adult language learners (45 males and 45 females) participated in this research. They were all of Iranian nationality and nonnative English language learners. The learners were studying English in an English language institute in Isfahan, Iran (Jahad Daneshgahi Institution). The learners were at intermediate level of English proficiency. In

order to ascertain that all the groups were homogeneous in terms of proficiency level, the placement test used by the institution was set as the criterion for the selection of the participants.

The sample comprised 90 students who were divided into three groups: two experimental groups and one control group with 30 students in each group, 15 males and 15 females. The participants in the two experimental groups (EG 1 and EG 2) were not aware that they were under treatment and none of the learners had heard of the keyword method (KWM) or mnemonics in general. In experimental group (1) the keywords and the associative picture were provided by the teacher and the learners in experimental group (2) were responsible to provide the keywords and the associative mental picture on their own. The control group (CG) included 30 English language learners, 15 males and 15 females and there was no instruction about the keyword method at all.

#### 4. Materials and instruments

The materials used in this study consisted of two tests, a pre-test and a posttest, each of which aimed to assess the performance of the learners on vocabulary recall. The pre-test included 70 vocabulary items from the glossary of the book including nouns, adjectives, verbs and adverbs and it aimed to measure the learners' vocabulary knowledge and to discard those vocabulary items which were familiar to the majority of the students.

Following the study, the instructor gave all the participants a vocabulary knowledge recall posttest. The posttest consisted of 50 English words previously studied, with no other information such as keywords or interactions. In the second test, the same format was applied, a test sheet was provided listing each vocabulary word and allowing space for the participants to fill in the appropriate meaning. In order to compare participants' vocabulary acquisition before and after the training among groups, the items for these tests were re-arranged in the second time in a different order to minimize possible rote memorization.

##### 4.1. Procedure

In order to conduct the research project three classes were assigned as the experimental groups (EG1 and EG2) and the control group (CG), each consisting of 30 students. All the learners in these groups were EFL learners at the same language institute and were homogenized by the institution through a placement test as the intermediate level. An experienced English teacher who received adequate training on the keyword method conducted the experiment. The same instructor taught the same teaching materials to all the three classes and the experiment took over one semester during regular class hours. None of the participants were aware that they were taking part in an experiment.

Before the treatment, a vocabulary knowledge test was administered as a pretest to all the three classes (EG1, EG2 and CG). The purpose was to eliminate the target words which most of the learners were familiar with. On the first day of the experiment, the instructor talked about the importance of vocabulary knowledge in language learning and the important role that the keyword method plays in vocabulary memorization for the experimental groups. Then the instructor introduced the keyword method, some examples were given and the learners were also given a written instruction in Farsi about how to use the keyword method.

From next session on, classroom procedure proceeded as purported in the textbook. However, when dealing with any new vocabulary in the texts for the first time the instructor associated that word to an acoustically similar keyword in Farsi and related that keyword to an interactive image with the Farsi meaning of that new word. Finally, students were asked to remember the image of the keyword and the definition together and to think of the keyword and what was happening in that image so as to retrieve the definition. In the experimental group (1), the teacher provided the keyword and the interactive image as mentioned above. On the other hand, in the experimental group (2) the teacher asked the learners to provide an acoustically similar keyword. Then while giving the definition of the new word, the learners were asked to present an interactive image of the meaning of the new word and the keyword.

The participants in the control group were given no introduction to the KWM. They received the traditional vocabulary instruction which focused on teaching and learning specific words and the meanings were presented via definitions or synonyms.

As the emphasis was placed on learning vocabulary as a memory task, the tests were straightforward. The learners in all groups, the experimental and the control groups, were given an immediate posttest and were asked to provide the appropriate translation in Farsi.

Finally the participants' productions were collected after the completion of tests. These productions were then carefully scored and two sets of scores were obtained for each group of participants to be analyzed through statistical measures.

#### 5. Discussion of the results

The first question in this study seeks to see if there is any difference between male and female EFL learners in learning foreign language vocabulary through the keyword method. We hypothesized that male and female foreign language learners will benefit equally from applying the keyword method in vocabulary recall. In order to find the answer we applied univariate analysis of variance. We also used T-Test to support our finding of the UNANOVA and to answer the second and third question of the study.

**5.1. Univariate analysis of variance**

The univariate analysis of variance is applied to present the analysis of variance for one dependent variable by more than one independent variable. Through utilizing UNANOVA, one can test the null hypothesis about the effects of other variables on the means of various groupings of a single dependent variable. One can also explore interactions between factors as well as the effects of individual factors. Here, the dependent variable was the participants' scores on post- tests. And the interaction between sex and different groups of participants on post-test scores was examined. The following Tables 1 and 2 show the outcomes.

If we cast an eye over the fifth column we will see the F ratio of the test. A significant F ratio (above 4.000) would mean that we can reject the null

hypothesis. Looking at this column, we notice that the F ratio is not large for group hypothesis (F=0.861) and sex hypothesis (F=0.069), not to mention for the interaction between group and sex (F=2.070). This signifies that the F ratio for group, sex and the interaction between group and sex is obviously less than our specified level (4.000), and thus indicating that the significance values of the test are greater than alpha level (.05). Therefore the null hypothesis is accepted and we can say that the hypothesis concerning if male and female foreign language learners benefit equally from applying the keyword method in vocabulary recall will be approved.

**Table 1:** Between Subject Factors

		Value label	N
Group	1.00	Experimental group 1	30
	2.00	Experimental group 2	30
	3.00	Control group	30
Sex	1.00	Male	45
	2.00	Female	45

**Table 2:** Tests of Between-Subjects Effects

Source	Type III Sum of Squares	DF	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power <sup>a</sup>
Intercept	138925.511	1	138925.51	31258.24	.004	1.000	31258.24	1.000
Hypothesis Error	4.444	1	4.444b	0			0	
Group	111.089	2	55.544	.861	.537	.463	1.723	.090
Hypothesis Error	128.956	2	64.478c					
Sex	4.444	1	4.444	.069	.817	.033	.069	.053
Hypothesis Error	128.956	2	64.478c					
Group * Sex	128.956	2	64.478	2.070	.133	.047	4.141	.415
Hypothesis Error	2616.000	84	31.143d					

**5.2. T-Test comparing the mean values of males and females in post-test scores**

In order to support the results of the univariate analysis of variance and find the answer to the second and third questions of the study, a t-test was also applied to compare the mean values of the post-test scores of the experimental groups (including 30 males and 30 females) who used the keyword

method as the vocabulary learning approach. First, the t-test was run for the experimental groups (1) and the experimental group (2) separately. Then the t-test was used for the experimental groups as a whole unit. The results are displayed below:

**5.2.1. T-Test [Experimental group (1)]**

**Table 3:** Group statistics

	SEX	N	Mean	Std. Deviation	Std. Error Mean
Post-Test Score	Male	15	42.0000	4.78091	1.23443
	Female	15	39.6667	5.62731	1.45297

As can be seen in Table 3, in the experimental group (1), in which the keyword method was applied while the teacher provided the keywords and the associative image for the students, males achieved

higher mean than females. However, the significance value (.231) in Table 4.27 signifies that the difference between the mean values of males and females in this group is statistically insignificant.

**Table 4:** Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-Test Score	Equal variances assumed	2.134	.155	<b>1.224</b>	28	<b>.231</b>	2.33333	1.90655	-1.57205	6.23872
	Equal variances not assumed			1.224	27.288	.231	2.33333	1.90655	-1.57665	6.24332

**5.2.2. T-Test [Experimental group (2)]**

**Table 5:** Group Statistics

	SEX	N	Mean	Std. Deviation	Std. Error Mean
Post-Test Score	Male	15	36.8000	7.32120	1.89033
	Female	15	39.7333	5.06341	1.30737

Casting look at Table 5, one can realize that females (39.7333) in the experimental group (2) outperforms the males. But the difference between

the mean values of males and females in this group is not statistically significant (.212 .05).

**Table 6:** Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-Test Score	Equal variances assumed	2.059	.162	-1.276 -1.276	28	.212	-2.93333	2.29838	-7.64135	1.77468
	Equal variances not assumed				24.89 9	.214	-2.93333	2.29838	-7.66790	1.80123

**5.2.3. T-Test [EG (1) +EG (2)]**

**Table 7:** Group Statistics

	SEX	N	Mean	Std. Deviation	Std. Error Mean
Post-Test Score	Male	30	39.4000	6.62597	1.20973
	Female	30	39.7000	5.25980	.96030

**Table 8:** Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-Test Score	Equal variances assumed	.520	.474	.194	58	.847	-.30000	1.54455	-3.39175	2.79175
	Equal variances not assumed			-.194	55.16 1	.847	-.30000	1.54455	-3.39514	2.79514

Table 7 depicts the mean values of males and females in the experimental group (EG1+EG2). According to Table 8, it is obvious that there is no significant difference between males and females in vocabulary post-test performance and the significance value in the sixth column confirms this fact (.847 .05).

The findings from the univariate analysis of variance and the T-Test revealed that male and females did not perform differently while applying the keyword method. Male and female language learners in the experimental group (1) and experimental group (2) benefit equally from the keyword method application in the classroom.

Males in the experimental group (1) got the mean score of 42 and males mean score in the experimental group (2) is 36.8. Thus, males in experimental group (1) outperform males in the other group but the difference is not statistically significant. Females in experimental group (1) obtained the mean score of 39.6667 which in comparison with mean score of females in the experimental group (2), 39.7333, there is not a statistically significant difference between them.

## 6. Conclusion

The major purpose behind this thesis was to give a clear description of the workings of mnemonic keyword method in actual classroom setting in Iran and to determine whether there were significant differences between male and female EFL learners through the application of the keyword method in the classroom. We hypothesized that males and females English language learners would benefit equally from applying the keyword method.

Quantitative analysis of the results showed that male and female language learners benefit equally from applying the keyword method in vocabulary recall since the F ratio for group, sex and the interaction between group and sex was obviously less than our specified level (4.000), which indicates that the significance values of the test are greater than alpha level (.05). Thus, the null hypothesis is accepted. On the other hand, the results of the T-Test also revealed that there was no significant difference between males and females in vocabulary post-test performance in the experimental group (1) and experimental group (2).

## References

- Amiryousefi, M. and Ketabi, S. (2011). Mnemonic instruction: a way to boost vocabulary learning and recall. *Journal of Language Teaching and Research, Vol. 2, No. 1, pp. 178-182, January 2011.*
- Batters, J. (1986). Do boys really think languages are just girl-talk? *Modern Languages, 67 (2), 75-79.*
- Bauer, D. J., Goldfield, B. A., and Reznik, J. S. (2002). Alternative approaches to analyzing individual differences in the rate of early vocabulary acquisition. *Applied Psycholinguistics, 23, 313-335.*
- Bruning, R., Schraw, G., and Ronning, R. (1999). *Cognitive psychology and instruction* (3rd ed.). New Jersey: Prentice-Hall.
- Fan, May, F. (2003). Frequency of Use, Perceived Usefulness and Actual usefulness of Second language Vocabulary Strategies: A Study of Hong Kong Learners. *The Modern language Journal, 87, pp. 222-241.*
- Halpern, D. and LaMay, M. (2000). The smarter sex: a critical review of sex differences in intelligence. *Educational Psychology Review, Vol. 12, No. 2.*
- Hauptmann, J. (2004). The effect of the integrated keyword method on vocabulary retention and motivation . PhD dissertation, School of Education, University of Leicester.
- Herlitz, A., and Rehnman, J. (2008). Sex differences in episodic memory. *Current Directions in Psychological Science, 17, 52-56.*
- Herlitz, A., Nilsson, L-G., and Backman, L. (1997). Gender differences in episodic memory. *Mem. Cog. 25: 801-811.*
- Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., and Lyons, T. (1991). Early vocabulary growth: Relation to language input and gender. *Developmental Psychology, 27, 236-248.*
- Ionescu, M. D. (2000). Sex differences in memory estimates for pictures and words. *Psychological Reports, 87, 315-322.*
- Jimenez, C. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics 13, 54-77.*
- Kimura, D. (1999). *Sex and cognition*. Cambridge, MA: The MIT Press.
- Klein, Susan. (2007). *Handbook for achieving gender equity through education*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Lewin, C., Wolgers, G., and Herlitz, A. (2001). Sex differences favoring women in verbal but not in visuospatial episodic memory. *Neuropsychology, 15, 165-173.*
- Mastropieri, M. A., and Scruggs, T. E. (1991). *Strategies for Learning Mnemonically*. Cambridge, MA: Brookline Books.
- O'Malley, M., Chamot, A., Stewner-Mananaraes, G., Kupper, L., and Russo, R. (1985). Learning strategies used by beginning and intermediate ESL students. *Language Learning. 35(1):21-46.*
- O'Malley, J. M., Chamot, A. U. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.

- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. New York: Newbury House.
- Postma, A., Kessels, R. P. C., and van Asselen, M. (2003). The neuropsychology of object location memory. In G. L. Allen (Ed.), *Human spatial memory: Remembering where* (pp. 143–160). Hillsdale, NJ: Erlbaum.
- Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt and N. Schmitt (Eds.), *Vocabulary Description, Acquisition and Pedagogy*. Cambridge: Cambridge University Press.
- Uster, S. (2008). The role of brain-based gender differences on the vocabulary learning and consolidation skills and strategies. M.A. Thesis, The Graduate School of Social Sciences of Middle East Technical University.