An Investigation of the Effects of G5 Mnemonic Technique in Learning Vocabulary among Iranian EFL Learners

Mitra Taghinezhad Vaskeh Mahalle

Department of English Language Teaching and Litrature, Ahar Branch, Islamic Azad University, Ahar, Iran

E-mail: mitre_vaskeh@yahoo.com

Nader Assadi Aidinlou (Corresponding author)

Department of English Language Teaching and Litrature, Ahar Branch, Islamic Azad University, Ahar, Iran

E-mail: naderasadi@yahoo.com

Abstract

This study aimed to study the effects of G5 mnemonic technique on Iranian English language learners' retention of vocabulary items. To do so, 40 Iranian English language learners' at intermediate level were randomly selected for the study. They were randomly divided into one experimental group and one control group. In order to get assurance as to the homogeneity of the learners they were pre-tested and a same test was repeated as post-test after 9 weeks. Both groups were taught about 360 vocabulary items. These vocabulary items were taught with mnemonic technique (G5) to the experimental group while control group did not receive any technique. Detailed analysis revealed that, there was a significant difference among experimental and control groups in retention of vocabulary items.

Keywords: Language learning strategies, Vocabulary learning strategies, Mnemonic strategies, G5 Technique

1. Introduction

Traditionally, vocabulary teaching and learning were often given little priority in second language programs but what is clear is that learning vocabulary is an essential part of mastering a second language (Schmidt, 2008). Learning strategies are whatever learners do in order to make their learning manageable and efficient, so they can be useful in transferring process. While effective learning is not merely a matter of an individual having a high IQ, what appears to be important is the learner's ability to respond to the particular learning situation and to manage their learning in an appropriate way. There are many strategies that people use to try to succeed in the complex task of learning a language. But there are a number of differences between language learning strategies. Some of them are used consciously and some of them are used unconsciously (Burden & Williams, 1997). Despite the abundance of research on vocabulary acquisition that has been conducted by linguists, psychologists and theorists of L2 acquisition, there is still no generally accepted theory of vocabulary acquisition. One thing that students, teachers, material writers, and researchers can all agree upon is that learning vocabulary is an essential part of mastering a language. In Iranian settings like other foreign language teaching settings one of the main issues in vocabulary teaching and learning is how to teach new words. Deciding on how to teach the new vocabulary items to students is very important problem during the teaching process. The new vocabulary items should be presented in such a way that the students can learn and remember them easily when they are needed. Retention of new vocabulary items is one of the problems of Iranian learners'. However, they always complain that they easily forget the newly learned words. Language teachers should be capable to analyze their textbooks to in order to finding out what kind of strategies or techniques are more useful during their teaching process.

So, this study attempts to introduce a kind of vocabulary learning strategy to EFL learners (especially Iranian EFL learners), through an investigation of G-5 mnemonic technique on Iranian EFL learners' vocabulary learning, to explore whether G-5 technique will effect students' vocabulary knowledge from the pre-test to the post-test.

2. Literature Review

Research into language learning strategies began in the 1960s, since when a considerable amount of descriptive works have been carried out in this area. In most of the research on language learning strategies, the primary concern has been on identifying what good language learners report they do to learn a second or foreign language (Rubin and Wenden, 1987). Good surveys of this field are provided by (Ellis, 1994; O'Malley & Chamot, 1990; Oxford, 1990; and Rubin & Wenden, 1987). The term language learning strategy has been defined by many researchers (Chmot & Kuber, 1989; Cohen, 1998; O'Malley & Chamot, 1990; Oxford, 1990; Richards & Platt, 1992; Rubin & Wenden, 1987; Stern, 1992; Tarone, 1983;). In sum it can be said that language learning strategies are specific actions, behaviors, tactics or techniques, which all language learners can use them during their learning process. Although, paying attention to different factors like age, gender, personality, anxiety, etc are important issue that teachers must be considered them when they decide to use strategies in

their classrooms. O'Malley (1985) in his classification of language learning strategies divided LLSs in to three main subcategories:

Metacognitive strategies, Cognitive strategies, and Socioaffective strategies

Oxford (1990) has developed also a somewhat different system of categorization which, while most containing most of the features of previous classifications, in more detailed. She divides language learning strategies in to two main classes, direct and indirect, which are, in turn, subdivided into six groups. In oxford's (1990) system some LLSs, which relate with learning directly are called direct strategies. Cognitive strategies, memory strategies and compensation strategies. Other LLSs are called indirect strategies because they support and manage language learning without, in many instances, directly the target language. Metacognitives strategies, affective strategies and social strategies (Burden & Williams, 1997). Stern (1992) stated that there are five main LLSs. Those are as follows:

Management and planning strategies, *Cognitive strategies*, *Communicative-Experiential strategies, Interpersonal strategies and Affective strategies*

2.1 Strategic Teaching and Teacher's Role in Strategy Training

Despite the fact that role of teacher is one of the important factors in strategy training most of the published work on learning strategies focuses almost entirely on what the learner does or should do .As Weinstein and Mayer (1986), "the good teacher is the one who teaches learners how to learn, how to remember, how to think, and how to motivate themselves". Teachers are expected to become actively involved in assessing, planning, and decision making about what their learners already know, what they need to know and exactly how they can be helped to become independent learners. Essentially, the teacher is required to assess the type and level of current strategy use, to select and describe an alternative strategy, if this is felt likely to be more helpful, to model the new strategy, and finally to support the learner's use of that strategy by a process of scaffolding (Burden & Williams, 1997).

Despite the mentioned factors, language teacher must also be aware of whether his strategy training is implicit or explicit. Generally, in direct or explicit teaching, the learners attention is directed to the strategy being taught, is preferred to indirect teaching where learners are not told the purpose of the tasks. In recent years the notion of learner training, i.e. the explicit teaching of strategies, has received a considerable amount of attention in English language teaching. The premise underpinning much of this work is that we can identify the strategies used by good language learners and then teach these to learners, thus increasing their ability to learn (Rubin & Wenden, 1987).

2.2 Vocabulary Strategy Training

As findings of the research within the field vocabulary acquisition and vocabulary learning strategies reveal, strategic teaching is one of the four approach to vocabulary teaching (Coady, 2000), the other three being learning from context (i,e, without explicit instruction); development plus explicit instruction (stressing explicit teaching at beginning levels and development towards contextualized learning); and teaching through practical classroom

activities (with no particular methodological foundation). The advocates of a strategic approach to vocabulary teaching, like Oxford and Scarcella (1994) find explicit strategy instruction crucial in vocabulary learning. It is necessary, they assert, to introduce occasionally decontextualized activities as an addition to extensive exposure to language input, because large amount of vocabulary can not be acquired in a short time through language skills only. This observation is specially. true for advanced learners. Long-term retention of vocabulary presupposes appropriate strategic support. Besides, by acquiring a repertoire of strategies, learners become independent learners able to expand their own vocabulary and meet their own vocabulary needs.

2.3 Mnemonic Strategies

Memory Strategies: help learner link one L2 item or concept with another but do not necessarily involve deep understanding. Various memory related strategies enable learners to learn and retrieve information in an orderly string (e.g., acronyms) while other techniques create learning and retrieval via sounds (e.g., rhyming), images (e.g., a mental picture of the word itself or the meaning of the word), a combination of sounds and images (e.g., the keyword method), body movement (e.g., total physical response), mechanical means (e.g., flashcards), or location (e.g., on a page or blackboard) (Oxford, 2003). Mnemonic Strategies: a mnemonic, with a silent, or mnemonic device, is any learning technique that aids information retention. Mnemonics aim to translate information in to a form that the human brain can retain better and even the process of applying this conversation might already aid the transfer of information to long-term memory (Soanes, 2006).

A lot of studies have focus on the recognition and instruction of language learning strategies in general and vocabulary in particular. There are, however, a few studies on mnemonic devices. While most of the gained results on mnemonic devices consistently indicated that the use of mnemonic devices substantially enhances higher levels of retention in immediate and delayed recall of second language vocabulary words in comparison with other learning strategies. For example, Raogh and Atiknson (1975) compared the keyword method with various control procedures for learning a Spanish vocabulary. In all cases, the keyword method proved to be highly effective, yielding in one experiment a final test score of 88% correct for the keyword group compared to 28% for the control group.

In another study Pressley et al (1981) studies on children 3 to 6 years of age in learning simple Spanish vocabulary items through keyword method, indicated that children who were instructed with key word, remembered more vocabulary than children who were not instructed in keyword method usage.

2.4 G5 Technique

G-5 technique is a kind of mnemonic strategies which involves learners more deeply in the process of learning. With a selective learning process these techniques allow learners to learn what they need to learn, when they want to learn it. Using the review scheduling system allows learners to maintain proper learning that minimizes the amount of time required to complete a card file in G-5and will enhance the process of learning. Using flashcards and

squires signing take place without effort but not incidentally. It has been designed with a very simple repetition algorithm according to Ebinghauses hypothesis: 1)better memory representation (e.g. with mnemonic techniques) and 2)repetition based on active recall (esp. spaced repetition).The learning curve described by Ebinghaus (1968), refers to how fast one learns information. The sharpest increase occurs after spaced repetitions. Like the forgetting curve, the learning curve is exponential. The forgetting curve hypothesizes the decline of memory retention in time. A related concept is the strength of memory that refers to the durability that, memory traces in the brain. The stronger the memory, the longer period of time, that a person is able to recall it. A typical graph of the forgetting curve purports to show that humans tend to halve their memory of newly learned knowledge in a matter of days or weeks unless they consciously review the learned material. In 1885, Hermann Ebbinghaus extrapolated the hypothesis of the exponential nature of forgetting.

3. Research Question

1. Does G5 technique have any effect on Iranian EFL learners' vocabulary knowledge?

4. Research Hypothesis

With respect to the research question the relative hypotheses of this study are as follow:

4.1 Null Hypothesis

1- G-5 technique does not have any effect on Iranian EFL learners' vocabulary knowledge.

4.2 Alternative Hypothesis

1- G-5 technique has effect on Iranian EFL learners' vocabulary knowledge.

5. Design of the Study

This study is a type of quasi-experimental research design. Two groups of learners were selected randomly (through a simple randomization) and assigned into experimental and control groups. While Experimental group received treatment but control group did not receive any treatment during this study.

Table 5.1. Design of the Study

Weeks	First-session	Second-session
First	Pre-test	Treatment
Second	Treatment	Treatment
Tenth	Treatment	Post-test

6. Methodology

This section includes an explanation of the steps taken during this study. The section describes briefly the design, participants, materials, instrument, procedure and treatments used in the study.

6.1 Subjects

The subjects in this study were 40 female EFL learners (their L1 was Persian) participants in this study had a different age from 21- 28. They were at intermediate level. The study was conducted at Alavi English teaching Institute in Talesh. These learners were chose through simple randomization (flip of a coin) and then they were divided into two groups randomly (flip a coin) one experimental group and one control group. They received three hours of English language instruction in two sessions 2 days a week. In order to get assurance as to the homogeneity of the learners they were pre-tested on their level of proficiency in vocabulary knowledge. T-test results indicated that there were no significant differences across the two groups of participants in their mastery over the EFL vocabulary knowledge (F= .177, P .838). In the second session of the first week, experimental group received G5 technique while the control group did not receive any technique (N=20). The researcher herself was the teacher of two groups and taught 400 vocabulary items to all the participants in these groups during the treatment. Words, however, taught in a same way in the classroom while the teacher read the words and then gave their meaning to Persian but experimental group received additional treatment rather than control group that it was G5 technique.

6.2 Instruments and Materials

Participants in two groups completed a pre-test and a post-test on vocabulary knowledge. The pre-test was administered before the treatment sessions. The same test was repeated as post-test nine weeks after the pre-test. The interval length (nine weeks) was long enough for the participants to forget the tests, because the same test was utilized in both tests. The test-retest reliability estimate for these tests indicated that the all of instruments were reliable. The content validity of these tests also was confirmed by three professional test-takers (at Ph.D level) in Alavi language teaching institute.

The vocabulary items used in the study were 400 items that were selected from 1100 words (Ghanbari, 2009). The researcher selected 400 vocabulary items, due to the time was devoted to the study. Three Multiple-choice item tests and one Matching test were selected as instruments of this study, which through them subjects were asked to select answer from several options for the given word. The Multiple-choice test was contained 60 questions, 20 Fill in the Blank Tests, 20 Tests on Synonyms, and 20 Tests on Antonyms. The Matching Test also, contained 20 questions which through them subjects were asked to select answer from several options for the given word. These kinds of tests were selected for the study with respect to the subjects' professional level. They were at intermediate level so, using some test such as reading comprehension or cloze passage tests that are contain a large number of vocabulary items may make them confused. Therefore Multiple-choice item and Matching Tests were selected by the researcher. The Multiple-choice test was contained 60 questions,

20 Fill in the Blank Tests, 20 Tests on Synonyms, and 20Tests on Antonyms. The Matching Test also, contained 20 questions (Appendices B, C, D, and E). All of tests taken from Rahnama TOEFL book (Teimori, 2008) published by Rahnama Press. Thus the total number of questions was 80 and one point awarded to each correct answer.

The Fill in the Blank Test included twenty sentences. Each sentence contained a missing word and the participants were asked to choose the correct word from the four options.

The second test was a Test on Synonyms. Twenty sentences were given and learners were asked to choose the correct synonyms for underlined words from four options in English.

The third test was a Test on Antonyms that was included twenty words in English. Learners asked to choose the antonyms words from four given options.

The last test was a Matching Test which included 42 words that were arranged in two columns (20 words for one column and 22 words for another column). The participants were asked to choose the synonymous words from the columns and then match them together.

G-5 technique was selected materials for this study. During the study participants in G5 group received G5 technique. This technique was introduced to them in the first session in order to, participants use it for learning the given word list.

6.3 Procedure

The entire study took 10 weeks, and all the participants were taught 20 vocabulary items each session while, all groups of participants were taught all words. In the second day of the first week all the participants received the word lists (is explained in previous section). The participants in the experimental group (N=20) received their specific techniques. 20 G5 boxes were prepared for the experimental group in order to practice stages of the study as will be mentioned in treatment section. Then students in experimental group familiarized with their instruction in a10 minutes introduction. The participants in the control group did not receive any technique. The total sessions of the study were 20 sessions (two days a week) while one session devoted to pre-test and one session devoted to post-test, therefore, the total sessions that devoted to the treatments were 18 sessions. Each session took one and half an hour out of which 30 minutes were devoted to vocabulary teaching.

6.4 Treatments

In this study the usual way of vocabulary teaching was used for the two groups. The teacher first read the word items and then gave their meaning to all the groups (20 words for each session). Despite the same type of teaching way to the two groups, G5 group received their treatment and then 20 participants in G5 group received 20 G5 boxes, while control group did not receive any treatment. Principles of accumulation of vocabulary according to G-5 technique for G-5 group: G-5 box contained five compartments. Twenty flash cards were written by learners in the classroom according to the given word lists every session. Participants put the written cards into the first compartment. This compartment contained the flash cards, which were repeated every day. The flash cards that had been correctly answered by participants in the next day were moved to the second compartment. The repetition

interval in the second compartment is set to two days. Flash cards that were successfully answered in the second compartment were moved to the third one etc. And the teacher tried to check their boxes in order to get assured they used their instructions at home. Thus, the treatment for G-5 Group can be summarized as follows:

- Correctly answered flash cards are moved into the next compartment.

- The higher the compartment the bigger is the repetition interval (in days).

- Incorrectly answered flash cards are moved to the first compartment where the repetition cycle starts all over again.

- The better you know the flash cards the more infrequently you repeat them.

6.5 Administration of the Tests

In the first session of the first week the pre-test was administered and participants in two groups received four tests: 1) Fill in the Blank Test 2) Synonyms Test 3) Antonyms Test 4) Matching Test. The post test was the same test as the pre-test which was administered with a ninth weeks distance to find out the effects of techniques over time.

6.6 Scoring Procedure

The Fill in the Blank Test, Antonyms Test, Synonym and Matching Test consisted of eighteen items. One point was awarded to any item that was correctly answered by the learners. As such, the maximum possible score was 20 for each test, and the total number of the tests was 80. The final number was calculated by dividing the total number of each test, is 80 by four. For example, if the total number of a test was 68 its final number was17.

7. Results and Discussion

The aim of this study is to explore whether Iranian EFL learners' vocabulary knowledge are effected by G5 technique. In this section, the results of the data collected during the study and the statistical analyses will be presented. Firstly, the descriptive statistics for each test and scores will be presented and then the related T-test of this study will be presented. In the Tables below "M" gives the mean, "HS" and "LS" gives high and low scores, df indicates the degrees of freedom that shows the differences between the sums and "SS" shows the sum of scores.

Research Question - Does G5 technique have any effect on Iranian EFL learners' vocabulary knowledge?

7.1 Scores

Respect to the research question two, the scores that are needed for answering this question are as follows: the obtained scores from two, G5 and control group from pre-test to post-test while the results for each of four kinds of given test will be presented by descriptive and inferential statistics. The result will be compared in order to answering the research question.

7.2 Descriptive Statistics

Tables (6.1- 6.4) show the descriptive statistics results for Fill in the Blank Test, Test on Synonyms, Test on Antonyms and Matching. These tables contained of mean scores, standard deviation, high scores and low scores of subjects from the pre-test to the post-test. Table (6.5) also shows the descriptive statistics for Total scores.

Table 7.1. Descriptive statistics for Fill in the Blank Test for G-5 and control groups

Group	Pre-test				Post-test			
	M	SD	HS	LS	M	SD	Hs	Ls
G-5	10.80	.720	11	9	18	1.88	12	15
Control	11.50	.759	13	10	12.50	.88	14	12

According to the descriptive statistics for Fill in the Blank test, subjects in both groups showed a gain from the pre-test to the post-test (see Table 6.1).

Table 7.2. Descriptive statistics for Synonyms Test for the G5 and control groups

Group	Pre-test				Post-test			
	M	SD	HS	LS	M	SD	Hs	Ls
G-5	10.75	.716	12	10	15.3	1.49	18	12
Control	11.15	.988	14	9	12.90	.852	14	12

According to the descriptive statistics for Test on Synonyms, both groups showed a gain from the pre-test to post-test (see Table 6.2).

Table 7.3 Descriptive Statistics for Antonyms Test for the G5 and Control Groups

Group	Pre-test				Post-test			
	M	SD	HS	LS	M	SD	Hs	Ls
G5	10.75	.7 8	12	9	15.40	1.72	17	14
Control	10.6	.81	13	10	12.8	1.15	14	10

According to the descriptive statistics for Test on Antonyms, both groups showed a gain from the pre-test to post-test (see Table 6.3).

Table 7.4. Descriptive statistics for Matching Test for the G5 and control groups

	Pre-test				Post-test			
Group	M	SD	HS	LS	M	SD	Hs	Ls
G5	11.5	.88	12	10	14.9	1.31	17	14
Control	11.00	.353	14	10	13.5	.825	14	11

According to the descriptive statistics for Matching Test, both groups showed a gain from the pre-test to post-test (see Table 6.4).

Table 7.5. Descriptive Statistics for Total Scores for the G5 and Control groups

	Pre-test				Post-test			
Group	M	SD	HS	LS	M	SD	Hs	Ls
G5	11.5	.88	11.41	11.20	15.41	1.41	18	11.50
Control	11	.35	11.5	11.25	12.83	2.15	13.5	11.95

According the total scores, both groups showed a gain in all kind of tests taken during the study from the pre-test to the pos- test (see Table 6.5). Dunnett t (>control)[a]

Dependent Variable	(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
Pretest	2.00	1.00	.36250	.54674	.386
	3.00	1.00	.20000	.54674	.513
Posttest	2.00	1.00	4.81250[*]	.45140	.000
	3.00	1.00	2.55000[*]	.45140	.000

8. Discussion of the Study

Considering the results and interpretations of the tests and total scores shown in the previous chapter the research question can be answered now:

1. Does G-5 technique effect on Iranian EFL learners' vocabulary knowledge?

As the results of the study indicate, there is a significant difference among scores of participants in G5 and control groups. Thus, results reject the related null hypothesis of the study and confirm the alternative hypothesis with respect to the related research question. So, according to the results it can be concluded that G5 technique have effect on Iranian EFL learners' Vocabulary knowledge. So, the result of this study can be in line with some of studies that confirm the use of language learning strategies, especially different kinds of mnemonic strategies in learning vocabulary (e.g., Gu & Jhonson, 1996; Cohen & Aphek, 1980; Levin, Nordwall, Margrate, 1992; and Soanes, 2006). Lessard-Clouston (1997) stated that," LLSs contribute to the development of the communicative competence of the students. Being a broad concept, LLSs are used to refer to all strategies foreign language learners use in learning the target language and communication strategies are one type of language learning strategies. It follows from this that language teachers aiming at developing the communicative competence of the students and language learning should be familiar with language learning strategies". The above views show the importance of LLSs but some of the important factors that must be considered here are, the role of teachers in strategy training in strategic teaching, and different factors influence the teaching and learning of strategies. The belief that language learning strategies are teachable and that learners can benefit from coaching in learning strategies underlies much of the research in the field (for instance Oxford, 1990; Larsen-Freeman, 1991; Cook, 1991). In line with this belief, many researchers have worked to demonstrate the pedagogical applications of findings from studies into language learning strategies. Mnemonic devices have been used for many centuries. These have proven effective in improving both immediate and delayed recall of L2 and FL vocabulary (Atkinson, Levin & Pressely, Raogh; 1978). Empirical research has produced findings about the effectiveness of the mnemonic technique for different age groups and for immediate versus delayed recall. Pressley and Levin (1987) adapted Atkinson's key word method to determine whether children could benefit from this strategy. Their results were consistent with Atkinson's (1975) conclusion about the effectiveness of the mnemonic technique used for vocabulary learning. Other experimental results suggested that that even 11 year olds are capable of using mnemonic technique improved both the immediate and recall of 11- year old and students' learning French vocabulary. In the study of Avila and Sadoski (1996), immediate and long-term retention of vocabulary learned by mnemonic technique was researched. Results regarding recall showed that mnemonic technique improved students' memory for definitions of the words.

References

Ebbinghaus, H. (1968). Retrieved from International Encyclopedia of the Social Sciences. Retrieved from http://www.ecnyclopedia.com/topic/Herman_Ebinghaus.aspx

Ellis, R. (2000). *Instructed Second Language Acquisition*. Oxford, UK & Cambridge, USA:Blackwell.

Faerch, & G. Kasper. (Eds). *Strategies in interlanguage communication* (pp. 61-74). London: Longman.

Levin, J. R., & Nordwall, M. B. (1992). Mnemonic Vocabulary Instruction: Additional

effectiveness evidence. *Contemporary Educational Psychology, 17*(2), 156-174. http://dx.doi.org/10.1016/0361-476X(92)90056-5

Malekinezhad, M. (2003). *A Big Unknown. Learning, studying, acquisition, writing, memory.* Iran National Libarary.

Nazari, T. E. (2008). Rahnama TOEFL. *Comprehensive Grammar, Vocabulary and Idioms for TOEFL.* Rahnama press.

O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition.* Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139524490

O'Malley, J. M., & Chamot, A. U. (1996). *Learning Strategies in Second Language Acquisition.* Cambridge: Cambridge: Applied Linguistcs. 26-56.

Oxford, R. (1990). *Language Learning Strategies: What every teacher should know.* New York: Newbury House.

Oxford, R. (2003*). Language Learning Styles And Strategies*: An Overview. GALA

Pavicic, T. V. (2008). *Vocabulary Learning Strategies and Foreign Language Acquisition.* Cromwell Press.

Robinson, P. (Ed.) (2001). *Cognition and Second Language Instruction*. Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9781139524780

Rubin, J. (1981). *The study of cognitive processes in second language learning. Applied Linguistics*, *1,* 117-31. http://dx.doi.org/10.1093/applin/II.2.117

Rubin, J. (1987). *Learner strategies: theoretical assumptions, research history and typology.*

Rubin, J. (1987). *Learner strategies: theoretical assumptions, research history and typology.* In A.

Schmidt, R. (1996). The role of consciousness in second language learning. *Applied Linguistics, 13,* 209-226.

Schmitt, N. (1997). *Vocabulary in Language Teaching*. Cambridge: Cambridge University Press.

Schmitt, N. (2002). *An introduction to applied linguistics*. Co- published in the United States of America by oxford university press. New Yorkcollege, Dublin, Ireland.

Stern, H, H. (1992). *Issues and options in language teaching*. Oxford: Oxford University

Tseng, W. T., & Schmitt, N. (2008). Toward *a Motivated* Vocabulary learning: A Structural Equation Modeling Approach. *Language Learning, 58,* 357-400. http://dx.doi.org/10.1111/j.1467-9922.2008.00444.x

Williams, B., & L. Burden, R. (1997). *Psychology for language teachers. Cambridge Language Teaching Library.* Cambridge university press.