The Effect of EFL Students' L2 Proficiency and Age on Their Overall Pattern of Vocabulary Learning Strategy Use

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Abstract

This study was an attempt to explore the effects of EFL students' L2 proficiency and age on their overall pattern of vocabulary learning strategy use. In order to conduct the study, two hundred and thirteen language students (112 male and 101 female) from different levels of language proficiency and different age groups (13-60) took part in the study. Two instruments were used in the study. First, a truncated test of TOEFL was used to classify the students into three proficiency levels and then a 56-item vocabulary learning strategy questionnaire was used to elicit information on the strategies used by the students to learn vocabulary. Several statistical analyses were conducted to analyze the obtained data. Through factor analysis, strategies were loaded in four factors and were named as cognitive, relational, social, and contextual. The results showed that both proficiency and age had some effects on the use of vocabulary learning strategies. Students with higher proficiency tended to use cognitive strategies more than the other two proficiency levels. Moreover, it was found that as students' age increased, their use of cognitive strategies increased while their use of social and contextual strategies decreased.

Keywords: L2 vocabulary, L2 proficiency, vocabulary learning strategies, age, Iranian EFL students

Introduction

In the past three decades or so, researchers and teachers have shown an increasing interest in determining what distinguishes successful from less successful learners. This has led to attempts to characterize successful language learners (Rubin, 1975), particularly their use of modifiable L2 variables, in the hope that such information can be passed onto less successful learners so as to improve their learning

efficiency. Prominent among these modifiable L2 variables is that of language learning strategy use.

Learning strategies have received much attention since the late 1970s and the investigation of language learning strategies has advanced our understanding of the processes learners use to develop their skills in a second or foreign language.

In spite of the increasing popularity of research on learning strategies since the mid 70s, the topic of learning strategies is a relatively new research area in Iran, especially L2 vocabulary learning strategies. This needs to be taken into account by Iranian teachers because their students need to continue to learn foreign languages, even when they are no longer in a formal classroom setting. If teachers include learning strategies as part of their instruction, they can play an active and valuable role in helping their students to become successful learners of the target language. Therefore, research on the language learning strategies of Iranian students should not only sensitize Iranian students and teachers to the use of these strategies but also encourage them to develop their own profiles of the learning strategies at work in their classrooms.

Background Qualitative Studies

A number of studies have explored the what and how of learners' strategy use in lexical acquisition (e. g., Cohen & Aphek, 1980, 1981; Brown & Perry, 1991; Lawson & Hogben, 1996; Riazi and Alvari, 2004). With consensus reached on the important role of selfawareness, self-monitoring, organization, and active involvement on the learners' part, these studies (and others) have advanced our knowledge of students' vocabulary learning strategies.

Pioneering work in the area was undertaken by Ahmed (1989). whose research centered around the identification of the ways in which good and poor learners approached lexical learning. He came to this conclusion that good learners showed greater awareness of what they could learn about new words and used more strategies overall.

Sanaoui's (1992, 1995) research, approaching the question from a more descriptive angle, was designed to offer a more complete picture of how students tackle the task of vocabulary learning. Her study set out to document in a detailed and thorough way the various approaches that learners employed and the different mnemonic procedures they used to facilitate their lexical learning. Establishing two groups of structured and unstructured approach, she concluded that students in the structured group had enhanced lexical acquisition.

However, in a study replicating the most essential steps of Sanaoui's research, Lessard-Clouston (1996) failed to find any relationship between students' approaches to vocabulary learning and their scores on a vocabulary knowledge measure.

Riazi and Alvari (2004) performed a piece of descriptive, qualitative research and concluded that students who used more different vocabulary strategies learn vocabulary items better and had longer retention. He also reported that gender did not have any role for the existing differences between the groups, and observed that students with higher proficiency used more strategies.

Quantitative Studies

Looking into the existing literature, there are a number of researchers who have investigated individual learning strategies or overall strategy use. However, "vocabulary" learning strategies is a relatively new area of study. In addition, although individual vocabulary learning strategies have been increasingly researched (e.g. Lawson & Hogben, 1996; Avila & Sadoski, 1996), only a few researchers have investigated vocabulary learning strategies as a whole.

Stoffer (1995) performed a piece of research on vocabulary learning strategies. In an attempt to classify vocabulary learning strategies he demonstrated that these strategies clustered into nine categories by factor analysis.

Another researcher who investigated a lot of vocabulary strategies is Schmitt (1997), who proposed his own taxonomy of vocabulary learning strategies. He concluded that strategies can change over time.

Kudo (1999) carried out a large scale study in Japan. The purpose of his research was to describe vocabulary learning strategies and to systematically categorize those strategies. He noticed that cognitively demanding strategies such as keyword method were unpopular among students whereas cognitively shallower ones such as verbal repetition were popular.

Guijarro-Fuentes and Garcia del Rio (2001) performed a research project from October 1999 to May 2000 in order to analyze the variety and amount of the different learning strategies used by foreign language learners while learning vocabulary. They claimed that the less proficient the learner is the higher and more varied language strategies he/she will use.

Jimenez Catalan (2003) investigated sex differences in L2 vocabulary learning strategies. She observed that the females' total strategy usage percentages were higher than those of the males'.

Based on the available literature reviewed and the need for a detailed and comprehensive study of vocabulary learning strategies in the Iranian EFL context, this quantitative study aimed to identify vocabulary learning strategies used by Iranian EFL language learners and look for the effect of proficiency and age on the use of these strategies, and ultimately, propose ways, if any, to improve students' vocabulary learning. It particularly tried to answer the following questions:

- 1. What vocabulary learning strategies are used by Iranian EFL students?
- 2. Is there any interaction between vocabulary learning strategies and proficiency levels?
- 3. Is there any relationship between the age of the students and their use of vocabulary strategies?

Method

Participants

Two hundred and twenty five language learners (117 males and 108 females) participated in this study, however, twelve students (5 males and 7 females) were eliminated from the study due to the fact that they were either studying a third language (e.g., French, German) or had lived in an English-speaking country for different periods of time. The

number of participants was thus 213. The students were recruited from 14 intact classes from two language institutes.

The first institute was Shiraz University Language Center (SULC) and the second one was Zabanamoozan Language institute. Table 1 presents the distribution of the participants of the study.

Table 1 Information about the participants

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Institutions	No. of participants	Gender	Age			
		Male Female				
SULC	151	102 49	13-55			
Zabanamoozan	62	10 52	30-55			
Total	213	112 101	13-55			

The participants were also divided into three groups of proficiency (high= 74, mid= 68, and low= 71) based on their scores on a proficiency test.

Instruments

The first instrument for data collection was a truncated form (the listening section of the test was removed) of a TOEFL test constructed by Educational Testing Service (ETS, 1998) was used to classify participants into three proficiency groups. The test consisted of 30 structure and written questions and 30 reading comprehension questions.

The second instrument was a 56-item questionnaire of vocabulary learning strategies which was based on Oxford's (1990) SILL and Schmitt's (1997) taxonomy of vocabulary learning strategies. The validity of Schmitt's taxonomy was reported by Kudo (1999) through factor analysis. The questionnaire was of Likert type with six options (never, seldom, occasionally, often, usually, and always). To present the participants with a better ideas of each of these options, percentages from 0% (never) to 100% (always) were also added to the

choices. The questionnaire consisted of two parts: the first part intended to gather some demographic information about the participants including their gender, grade level, age, and the period they might have lived in a foreign country, and if they had studied another language besides English. In the second part, there were 56 questions relating to the use of vocabulary learning strategies.

In order to check the reliability of the questionnaire for the present study, a test-retest technique with a two-week interval was run with 30 EFL students. The Pearson Product Moment Reliability Coefficient was 0.92.

Procedures for Data Collection and Data Analysis

The data were collected in two different sessions. The proficiency test was administered in one 75-minute session with some Persian instructions for performing the test.

The questionnaire was administered in another session. Instruction as to how to complete the questionnaire was given in Persian. There was no time limit for the completion of the questionnaire. Students could ask any questions about the content of the questionnaire if they came to any blurred point. One of the researchers was present at the time of data collection to answer and clarify anything that the students found difficult to understand.

After collecting the data, statistical analyses were performed using SPSS for Windows version 10.0. The collected data were subjected to descriptive statistics to find out the general characteristics of the groups. Secondly, factor analysis was run on the vocabulary learning questionnaire to see the loading of factors. Thirdly, the data were subjected to MANOVA to find out any possible differences between the students' use of vocabulary learning strategies and their level of proficiency. Finally, Pearson Product Moment Correlation was used to see the relationship, if any, between the age of the students and the use of vocabulary learning strategies.

Results

Descriptive Statistics

The obtained data were descriptively analyzed. The 56 items of the questionnaire were sorted out based on the means of the items. Then 10 strategies from top and 10 from the bottom with the higher and lower means were chosen. Those with the mean of more than 4 were considered as the most frequent used strategies and those with the mean of below 3 were considered as the least frequent used strategies.

Tables 3 and 4 illustrate the chosen categories of strategies used more and less frequently by the participants.

Table 2
Strategies used most frequently by the students

	Strategies asea most frequently by the stadents	
Item	Item	Mean
No.		
21	Use a monolingual dictionary	4.62
44	Take notes in class at language institutes	4.40
46	Keep a vocabulary notebook	4.38
37	Take notes in class at high school/university	4.35
4	Guess from textual context/text in which the new word	4.28
36	Use the vocabulary section in your book	4.27
34	Learn the word of an idiom altogether	4.23
2	Learn word from paper tests (from failure)	4.05
32	Connect words to already known words	4.05
30	Use new words in sentences	4.01

As can be seen in tables, item 21 with the mean of 4.62 and item 51 with the mean of 1.53 are the most and least frequently used strategies by the participants of this study.

Table 3 Strategies used less frequently by the students

	strategies asea less inequently by the stadents	
Item	Item	Mean
51	Ask your uncle or aunt for Persian translation	1.53
25	Test with your parents	1.65
33	Ask your parents for Persian translation	1.74
18	Ask an English teacher to check your flashcards or word lists for	1.87
3	Listen to the tape of word lists	2.02
35	Ask your private teacher for Persian translations	2.03
43	Ask your brother or your sister for Persian translation	2.12
40	Use semantic maps (word trees)	2.18
15	Put English labels on physical objects	2.35
9	Skip or pass new words	2.40

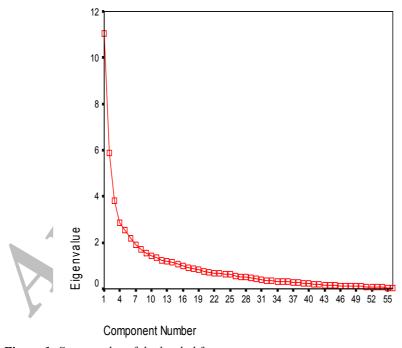


Figure 1: Screen plot of the loaded factors

Factor Analysis

Exploratory factor analysis with Varimax rotation was run to find the underlying factors for the questionnaire. Using the loadings above 0.3 from the rotated component matrix, items were loaded in four factors. Six items were eliminated. The reason for the elimination of these items was the fact that four of them were loaded in more than one factor and had common variance and two of them did not reach the acceptable point, i.e. 0.3.

Figure 1 presents the screen plot of factor analysis which shows the loadings of factors.

One caveat that should be taken into account regarding the factor analysis in this study is the number of students. Since the sample was not that large, results should be taken with some caution.

The extracted factors were submitted to six experts in the field to be named. The following table shows the naming of the factors.

Table 4
Naming of factors

No.	Factors
1	Cognitive (Using audio-visual and textual sources)
2	Relational (Using mnemonic devices and personal experiences)
3	Social (Asking others for help)
4	Contextual (Using classroom context)

MANOVA (Multiple analyses of variances)

MANOVA was run to see the relationship between the Proficiency levels and the use of vocabulary learning strategies. Table 6 shows the results of MANOVA obtained. As can be seen in the table, proficiency, strategy, and the interaction between them were significant at p<0.001.

Table 5
The obtained results of MANOVA

	Source	SS	df	MS	F	P<
Between	Prof	5078.2	2	2539.11	31.11	0.001
subjects	Error	17138.03	210	81.6		
Within subjects	Strategy	483526.38	3	161175.46	4742.43	0.001
	Str*prof	39281.93	6	6546.99	192.63	0.001
	error	21411.06	630	33.98		

Then Post Hoc Tukey Test was run to see the exact point of differences. It showed significant difference between high and low and high and mid levels of proficiency.

Since significant differences came up, one-way ANOVA was run for each factor in the proficiency levels to see the exact differences. One-way ANOVA showed that the F-value for factors one, two, and three were again significant but no significance was found for factor four. In case of the first three factors Post Hoc Scheffe test was run to find the exact differences between the factors and proficiency levels.

The Post Hoc Scheffe test showed that there was difference between the low and high and mid and high proficiency levels in factor one and between the low and high proficiency levels in factor two. Also it showed that there was difference between the low and high and mid and high proficiency levels in factor three.

The following figure shows a clear picture of interaction between factors and proficiency levels.

It can be concluded that as the proficiency of the language learners increased, they made more use of cognitive strategies and less use of other strategies.

After finding significant differences in within subject row and the differences between the factors and the proficiency levels, the paired sample t-test with Bonferroni correction was run as a Post Hoc test to identify the exact points of differences between the factors. The following tables show the descriptive statistics of factors and the results of the Paired sample t-test.

Looking at the paired sample t-test table and the descriptive table of factors, the following interpretations can be made:

- 1. The t-value for cognitive and relational factors is 33.4 at $p \le 0.001$ and their means are 79.2 and 36.33. This shows that the students used cognitive strategies more frequently than relational ones.
- 2. The t-value for cognitive and social factors is 47.5 at $p \le 0.001$ and their means are 79.2 and 17.46. This again shows that between these two factors, students used cognitive strategies more than relational strategies.
- 3. The t-value for cognitive and contextual factors is 48.8 at $p \le 0.001$ and their means are 79.2 and 24.08. This shows that between these two factors students made more use of cognitive strategies.
- 4. The t-value for relational and social factors is 39.8 at $p \le 0.001$ and their means are 36.33 and 17.46. In this case students used relational strategies more than social ones.
- 5. The t-value for relational and contextual factors is 21.1 at $p \le 0.001$ and their means are 36.33 and 24.08. This shows that students made use of relational strategies more than contextual ones.
- 6. The t-value for social and contextual factors is 15.1 at $p \le 0.001$ and their means are 17.46 and 24.08. In case of these two last factors, it can be said that students used contextual strategies more than social ones.

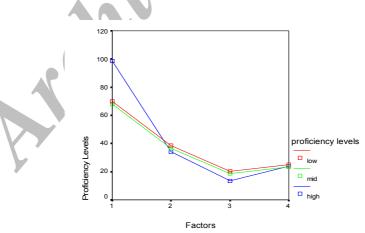


Figure 2: Interaction effect between factors and proficiency levels

Table 6
Means and standard deviations of the four factors

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	Index Mean	Standard deviation			
Factors					
	70.2	16,006			
Cognitive	79.2	16.906			
Relational	36.33	7.552			
Contextual	24.08	4.303			
Social	17.46	5.452			
total	157.07	20.474			

Table 7
Paired sample t-test table

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factors	Cognitive	Relational	Social	Contextual		
Cognitive		V 1				
Relational	t=33.4					
Social	t=47.5	t=39.08				
	p≤ 0.001	p≤ 0.001				
Contextual	t=48.8	t=21.1	t=15.1			
	p≤ 0.001	p≤ 0.001	p≤ 0.001			

DF=212

Correlation results

In order to find out the relationship between the students' age and their use of factors, correlational analysis was run. The correlation coefficients between the four factors and the age of students were obtained. The following matrix shows the results.

Table 8
Pearson Correlation Matrix

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Age	Cognitive	Relational	Social	Contextual	
1					
R = .139	1				
P < .042					
R =062	R =032	1			
P< NS	P < NS				
R =268	R =242	R=.45	1		
P < .001	P < .001	P<.001			
R =186	R = .223	R=057	R = .162	1	
P<.006	P<.001	P< NS	P<.018		
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As can be seen in the correlation matrix, the correlation coefficient between age and cognitive strategies is .139 at p< .042 and it is positive. Therefore, it seems that as the age of the students increased the use of cognitive strategies increased as well.

No significance was found between age and relational strategies. The correlation coefficient for social strategies is -.268 at p<.001 and -.186 at p<.006 for contextual strategies. Thus it seems that as the age of language learners increased, the use of strategies in these two factors decreased.

Discussion

Category Analysis

As described in the result section, factor one, i.e. cognitive strategies, with the overall mean of 79.2 turned out to be the most actively used category. 21 items loaded on this factor that made this factor the biggest category among the four categories. Furthermore, item 21 of the questionnaire, to use a monolingual dictionary, was the most frequently used strategy not only among the cognitive strategies, but overall. It received a mean of 4.62, which means that students *usually* or *always* used an English-to-English dictionary on average. This is in sharp contrast with Kudo's (1999) and, to some extent, Riazi and

Alvari's (2004) studies. Kudo reported that in Japan the use of a bilingual dictionary is a common practice due to the widespread practice of grammar-translation method. Riazi and Alvari also reported much more use of bilingual dictionary than monolingual one. This may be justified given the context of the present study. One reason for such a finding in this study seems to be the institutions from which the data were obtained. By the passage of time with a trend toward communicative language teaching it seems that students are more and more oriented toward using authentic materials and they are discouraged by teachers and institutes to make use of translation in their English study.

The least used strategy in this category was the use of loanwords with the mean of 2.57. It seems that students do not pay attention to the words that come from other languages or even the use of them in their mother tongue.

Factor two, relational strategies, with the mean of 36.33 was the second most actively used category. This category consists of mnemonic devices and personal experiences. 14 items loaded on this factor. Item 47 of the questionnaire, imaging the meaning of the new words, received the highest mean (3.62) among all the relational strategies. This means that the students tried to make a mental picture of the new word if possible in order to memorize it better. The least used strategy in this category was item 35 (mean=2.03) of the questionnaire, asking your private teacher for Persian translation.

Factor four, contextual strategies, with the mean of 24.08 ranked the third used category. 7 items loaded on this category. Item 37 of the questionnaire, taking notes in class at high school/university, with the mean of 4.35 was on top of the other strategies. Item 28 of the questionnaire, doing written repetition, with the mean of 2.77 was the least used strategy in this category. The results show that students are more willing to take notes inside classes than doing written repetition.

Factor three, social strategies, with the mean of 17.46 was the least commonly used category. 8 items loaded on this category. One reason may be that students tend not to collaborate to learn vocabulary. This may be due to, at least in part, the fact that vocabulary learning does not necessarily require social interaction;

students can learn words simply by using dictionaries and listening to explanations about teachers' new words. communicative activities in and outside the classroom can facilitate negotiations about the meanings of new words, the results seem to indicate that this is rarely the case. All the strategies that involve such negotiations received lower means with the exception of the strategy 'to ask an English conversation teacher for a paraphrase or synonym' with the mean of 3.44. This was still low, yet higher than other social strategies. Of course something that should be taken into account in here is the fact that even here the social interaction is between the students and the teacher. On the other hand, the lowest mean belonged to item 51 of the questionnaire, asking your uncle or aunt for Persian translation, with the mean of 1.53. This shows that in our Iranian context the social interaction between students and relatives is not that good when it comes to learning languages. The use of this category is in line with Kudo's (1999) study in which he also found that in Japan students made little use of social interactions in their learning English.

Another interesting finding was the fact that advances in science and technology seem to have affected our learning environments. Students reported that they made use of different types of media especially the electronic ones. The use of English language internet with the mean of 3.72, the use of electronic dictionaries with the mean of 3.27, the use of English language TV programs with the mean of 3.51, the use of English language radio programs with the mean of 3.75 and English language movies with the mean of 3.92 were among the strategies used by the students.

Another finding was the less frequently used strategies such as semantic map and keyword method, although they have often been discussed as useful techniques to learn vocabulary (e.g., Avila & Sadoski, 1996; Schmitt, 1997). This is consistent with Schmitt's (1997) research. According to him, these strategies involve deeper cognitive processing and thus may be too difficult for most students to employ. Another reason could be teachers' lack of knowledge about

these strategies and thus not to be able to teach the use of these strategies to their students.

On the whole, the statistics revealed the following general points: First, social interactions were rarely used. Second, the cognitively shallower strategies tended to be employed more often than the deeper ones. Finally, the participants seemed to use multimedia to learn vocabulary.

Proficiency

As it was described in the result section, proficiency of the students indeed had some effects on the use of vocabulary learning strategies. As students proficiency level increased, they made more use of vocabulary strategies especially those strategies that were cognitively deeper. This is in line with those researchers who believe that proficiency has an effect on language learning strategy use (e.g., Politzer, 1983; Chamot, et al, 1987; Oxford & Nyikos, 1989) and in sharp contrast with Guijarro-Fuentes and Garcia del Rio's (2001) research in which they found that the less proficient learners used higher and more varied vocabulary learning strategies.

Age

As far as age was concerned in this study, the results showed that age had some effects on the students' pattern of vocabulary learning strategy use. As shown in table 9, the age of the students had positive correlation with cognitive strategies indicating that as the age of the students increased their use of cognitive strategies increased as well. Regarding social and contextual strategies, negative correlations were found between the students' age and the use of these strategies.

All in all, it can be concluded that as students get more matured they prefer to depend on their own cognitive resources in order to learn vocabulary than to have social interactions or use the context.

Conclusion

As it was indicated above, some findings of the questionnaire turned out to be congruent with past research (e.g. Chamot, et al, 1987; Oxford 1990; Schmitt 1997). The strategies most frequently used were

shallower cognitive strategies, and the strategies less commonly used were those that involved deeper cognitive processing, such as keyword technique and semantic mapping. Therefore, teachers should be aware of the strategies that are beneficial to the students and include them in their teaching.

There are some implications that can be derived from this research. Results of this study showed that language learners made more use of some traditional, cliché vocabulary learning strategies such as taking notes in class, keeping vocabulary notebooks, using new words in sentences, and so on which are very common in Iranian EFL learning environments. This study revealed that there are a lot of useful strategies which are not commonly used as tools for learning. These strategies are those which need deeper cognitive activities such as keyword method and semantic mapping, social strategies like pair work or group interactions among students in class, and the use of multi-media and audio-visual aids in class and at home. English teachers might want to introduce such potentially effective techniques to their students and encourage them to try these strategies out. So, it is suggested that students be exposed to a lot of strategies in their course of language learning.

The goal of such instruction is to enhance learner autonomy and learning that is more independent. Therefore, the first step is to have students identify what strategies they actually use. If students are not aware of what they are doing, students and their teachers cannot improve learning. The questionnaire used in this study might prove useful for diagnostic purposes to identify what strategies students use and which ones they do not use. To do this, students seriously need to reflect on their learning. Once they identify what they do and what they do not, teachers can help them choose and explore strategies that seem suitable to them to be able to learn the target language more effectively, and to self-evaluate and self-direct their learning.

Finally, the goal of strategy training is for students to be self directed learners. To accomplish this goal, teacher trainers and teachers must be knowledgeable about as many strategies as possible and introduce them to their students whenever students need help. If teachers are not very knowledgeable about strategies, they need to make the effort to investigate strategies by themselves or consult with specialists in the field.

This study addressed the question on the issue of vocabulary learning strategies in EFL language institutions. Naturally, there are some limitations in a study like this. First, since the questionnaire is self-report and the only source of information in this study, it may not be quite clear whether the participants actually used the strategies they indicated in learning vocabulary. Their responses may be just their beliefs or thoughts they have about their use of strategies. In order to investigate students' actual use of strategies, it would be a good idea that researchers observe classes where vocabulary learning is taking place, use think aloud procedures, or interview students to find out what exactly they do to learn new words. Although such multiple sources were not feasible for this study, they would have provided more insights into what learners actually do.

There may have been unclear points in the questionnaire itself. For instance, the six Likert scale continuum may have been blurred because the interpretations of these scales can change according to the context (Hatch & Brown, 1995). Therefore it would have been better if the context had been specified.

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