

An Investigation of Reading Strategies Used by Iranian EFL Intermediate Readers

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Abstract

This study investigated the relationship between reading comprehension and reading, cognitive, metacognitive, and test-taking strategies. A reading strategy questionnaire and TOEFL reading test were given to 60 intermediate EFL students of Qaemshahr Azad University. A high correlation was found between using reading strategies and learners' reading proficiency ($r = .52$). Moreover, two 30-member groups of successful and less successful readers were compared in terms of using reading strategies in general and cognitive, metacognitive, and test-taking strategies in particular. The results showed that successful readers used reading strategies more than less successful ones ($t = 4.7$). Successful readers used cognitive and metacognitive strategies, more frequently than less successful ones ($t = 8.74$, $t = 2.45$, respectively). But less successful readers used test-taking strategies more than successful ones ($t = -5.01$).

Keywords: Reading comprehension, Reading strategy, Cognitive reading strategies, Metacognitive reading strategies, Test-taking reading strategies.

I. Introduction

Nowadays reading is considered to be an active skill rather than a passive one. The reading process is no longer limited to analyzing the vocabularies and structures of the sentences, it also involves making use of different reading strategies. A good reader should be armed with a wide range of reading strategies in order to comprehend the text effectively and to solve the possible ambiguities.

Comprehension involves an active, dynamic, and growing process of searching for interrelationships in a text. Reading process implies an active cognitive system operating on printed material to arrive at an understanding of the message. The reader's task is to activate background and linguistic knowledge to recreate the writer's intended meaning (Chastain, 1988). A large body of research has been conducted to determine the factors that directly or indirectly affect reading comprehension. The early studies were devoted to examining the role of elements of the language (words, structures, etc.) on reading comprehension. Now a great deal of attention is devoted to the active role of the readers in the reading process. It is the reader who brings his/her knowledge to the text in order to understand the intention of the writer. One of the things that the reader may bring to the text is the ability to use reading strategies.

By definition, reading strategies indicate how readers conceive of a task, how they make sense of what they read, and what they do when they do not understand. Such strategies are used by the reader to enhance reading comprehension and overcome comprehension failure. In general, reading strategies are operations or procedures performed by a reader to achieve the goal of

comprehension (Kern, 1989). In order to study reading strategies more precisely, in the present study reading strategies were divided into cognitive, metacognitive, and test-taking strategies and each of them have been studied separately.

Cognitive strategies enable learners to understand and produce new language by many different means. Cognitive strategies are classified as practicing, receiving and sending messages, analyzing, and creating structure for the input and output, such as reasoning, analyzing, summarizing, and practicing (Oxford, 1990).

Metacognitive strategies means beyond, besides or with the cognitive. Metacognitive strategies involve knowing about learning and controlling learning through planning, monitoring, evaluation, and the learning activity. Metacognitive strategies are actions which go beyond the purely cognitive devices and provide a way for the learners to control their own cognition and to coordinate their own learning process (Oxford, 1990).

Test-taking behavior includes how readers engage in a reading comprehension test and the repertoire of skills and strategies required to complete the test (Alderson, 1990). Readers who use these types of strategies pay more attention to the reading comprehension questions than the text itself and try to use their test-taking experience while they are reading other texts. Reading the questions before reading the text is the other test-taking strategy, readers who use this strategy, first read the questions and then read the text to find the answer to those questions.

It is believed that using reading strategies would lead to efficient reading comprehension. One of the factors that make a distinction among readers is the kind and frequency of reading strategies used. Cook (1989) distinguishes good or mature readers (successful readers in this thesis) and poor or immature readers (less successful readers in this thesis) in this way:

During reading good readers focus attention, anticipate and predict, use fix-up strategies when lack of understanding occurs, use contextual analysis to understand new terms, use text structure to assist comprehension, organize and integrate new information, and self-monitor comprehension by knowing comprehension is occurring and knowing what is being understood, while poor readers are easily distracted, read to get done, do not know what to do when lack of understanding occurs, do not recognize important vocabulary, do not see any organization, add on rather than integrate new information, and do not realize they do not understand.

There is no doubt that using reading strategies helps learners discover how to read effectively and more easily. Now that the educational system in Iran tries to promote EFL learners reading skills, and that many strategy instruction programs of different skills are claimed to have helped learners, attempts should be made to help EFL learners to read easily, effectively, and strategically by finding the factors that play important roles in effective reading comprehension.

Although the important role of reading strategies in the reading process is acknowledged; and good readers and poor readers are known to be different in kind, manner, and number of reading strategies which they use, it is not yet known how they are different. Are good readers significantly different from poor readers in this regard? If yes, how much?

This study is significant because it focuses its attention on the most-needed and important skill in Iran; i.e., reading. Reading comprehension has come to be the “essence of reading” (Durkin, 1993), essential not only to academic learning in all subject areas but also to professional success and, indeed to lifelong learning (Pritchard et al., 1999; Rings, 1994; Strydom, 1997).

In the modern teaching methodologies the role of the learners is really important. The degree of the interactions which happen between the reader and the text determines efficiency of the comprehension of the text. One of the necessary techniques which readers should employ to understand the text is using reading strategies. The other significance of this study is that it deals with the strategies that a reader needs to know and use in the process of reading comprehension.

This study tries to answer the following questions:

1. Is there any relationship between using reading strategies and reading comprehension scores of EFL readers at the intermediate level?
2. Is there any difference between the reading strategies used by the successful and the less successful EFL readers at the intermediate level?
3. Is there any difference between the cognitive, metacognitive, and test-taking strategies used by the successful and the less successful EFL readers at the intermediate level?

II. Method

A. Participants

The subjects of the study were 60 students of Qaemshahr Azad University majoring in English Translation. The subjects were at intermediate level and between 23-26 years of age. The subjects include 14 male and 46 female students. Since the subjects are members of three already formed classes of the college, the researcher deals with an intact group.

B. Materials and Instrumentation

Reading Comprehension Test

In order to determine subjects' reading comprehension ability and separate the subjects into two groups (high and low level of reading comprehension ability) a reading comprehension test was used. The reading comprehension test which was extracted from Baron's TOEFL (1990), includes 5 passages and 50 multiple-choice questions. TOEFL tests were held every term in this university to test students' general English level, so participants are familiar with the TOEFL test.

Reading Strategy Questionnaire

In order to test the students' reading strategy, a 34-item questionnaire was used. This questionnaire was comprised of 24 cognitive, 3 metacognitive, and 7 test-taking items. This questionnaire was prepared by Mazlumzavaragh (2000). The reading strategy questionnaire is presented in the Appendix A.

This 34-item questionnaire was developed based on the literature on learning strategy in general and on reading strategies in particular; and the available strategies questionnaire such as SILL (Strategy Inventory for Language Learning) and BQLL (Behavior Questionnaire in Language Learning), etc.

Factor analysis was used to find validity of the developed reading strategies questionnaire. To run factor analysis 225 EFL learners filled out the original 34-item questionnaire. The analysis showed only 12 items had merged into 3 factors; namely factor 1, factor 2, and factor 3, and each factor included 4 items: (9,12,19,22/ 8,16,23,29/ 2,3,14,31, respectively). In Mazlumzavaragh (2000) both 34-item questionnaire, which was made based on literature, and 12-item questionnaire, which was made based on factor analysis, were given to the subjects and at the end of the study two independent calculations were done comparing the results while taking into account the categories of literature and while taking into account the categories of factor analysis. In order to check the validity of these two questionnaires, the difference between pretest and posttest of these questionnaires were compared. In Mazlumzavaragh (2000) it was shown that both questionnaires are valid instruments to identify subjects' reading strategies. Statistical analysis and tables of results are present in Appendix B.

To determine the reliability of the reading strategies inventories, the strategy scores were processed by SPSS for their Cronbach Alpha reliability index. The Cronbach reliability index for the questionnaires based on the literature and factor analysis turned out to be 0.73 and 0.67 respectively which, statistically speaking, are high indices. Statistical analysis and tables of results are present in Appendix B.

C. Design

The independent variable of this study is using reading strategies which includes cognitive, metacognitive, and test-taking strategies; and the dependent variable is learners' reading comprehension ability. An ex post facto design was used to carry out this study.

D. Procedure

During one session, the reading strategy questionnaire and the reading comprehension test were given to the subjects. 17 minutes were devoted to answering the questionnaire, and 55 minutes were devoted to completing the reading comprehension test.

To prevent possible immediate effect of taking the reading comprehension test on answering the questionnaire the students took the questionnaire first and then the reading comprehension test.

In order to answer the Likert-type items of the reading strategies questionnaire, subjects were asked to select statements on a continuum from always to never (always, often, sometimes, and never). Strategic readers are supposed to report using strategies always and often and nonstrategic readers sometimes and never. The scale of questionnaire was coded as Always = 4, Often = 3, Sometimes = 2, Never = 1. So the highest score would be 136 and lowest score would be 34. The mean square of each subject was calculated for four subscales; 1) the whole 34 reading strategies items, 2) 24 cognitive strategies items, 3) 3 metacognitive strategies items, and 4) 7 test-taking strategies items.

The TOEFL test, which was used to check the reading comprehension ability of the subjects, contained 5 passages and 50 multiple-choice questions. Each item had one score, so the scores of the subjects were between 0 and 50.

After performing the TOEFL test and reading strategies questionnaire, there were two lists of scores; one list was reading comprehension scores and one was reading strategies questionnaire scores. Since reading strategies questionnaire included 24 cognitive strategies, 3 metacognitive strategies, and 7 test-taking strategies items, the scores which were related to these items were determined. Therefore there were five lists of scores: one list of reading comprehension scores, one list of reading strategies questionnaire scores, one list of cognitive reading strategies scores, one list of metacognitive reading strategies scores, and one list of test-taking reading strategies scores.

Based on the scores of the TOEFL test, the subjects were ranked from the highest score to the lowest score in terms of reading comprehension ability. It is worth mentioning that, at the beginning of the study, the reading comprehension test was given to 70 subjects. The overall scores of the reading comprehension test were ranked from the highest score to the lowest score. 10 subjects who had intermediate score (30) and were at the middle of the continuum (from high score to the low score) were omitted from the study, and 60 subjects were separated into two 30-subject groups (high and low level of reading comprehension ability).

The answers of the reading strategy questionnaire which belong to the subjects of these two (high and low) groups were identified. Therefore, at the end of this phase each of the 60 subjects had one reading comprehension, one reading strategies, one cognitive strategies, one metacognitive strategies, and one test-taking strategies scores. Finally, the data was ready to be analyzed statistically.

E. Data Analysis

After collecting the quantitative data on two variables (reading comprehension ability and reading strategies) for each of the students in the sample, it was time to calculate the coefficient of correlation between paired scores. The correlation between the reading comprehension scores and the results of reading strategy questionnaire was determined by Pearson r formula.

In the second step, 60 subjects were divided into two (high and low) 30-member groups based on their reading comprehension scores. The independent t -test was used to find the mean difference between high and low groups. The mean difference of high and low groups was once compared in terms of reading strategies as a whole, and once in terms of cognitive, metacognitive and test-taking reading strategies in particular.

III. Results and Analysis

The data that were gathered included 60 reading comprehension scores, 60 reading strategy scores, 60 cognitive scores, 60 metacognitive scores, and 60 test-taking scores. These results are shown in Table 1.

TABLE I
 THE RESULTS OF READING COMPREHENSION, READING STRATEGY (COGNITIVE,
 METACOGNITIVE, TEST-TAKING) TESTS

	Reading Comprehension	Reading Strategy	Cognitive	Metacognitive	Test-Taking
Highest Score	43	118	84	12	28
Lowest Score	12	66	45	4	14
Mean	27.48	96.95	66.7	9.00	21.21
Standard Deviation	8.45	10.23	8.93	1.74	3.36

It was interesting that the lowest score in reading comprehension and the lowest score in reading strategy questionnaire belonged to the same participant.

A. First Research Question

In order to find the answer to the first research question “Is there any relationship between using reading strategies and reading comprehension scores of EFL readers at the intermediate level?” a Pearson r correlation was run. The results are shown in Table.2.

TABLE II
 CORRELATION BETWEEN READING STRATEGIES AND READING COMPREHENSION

		READING COMPREHENSION	READING STRATEGY
READING COMPREHENSION	Pearson Correlation	1	.525(**)
	Sig. (2-tailed)	.	.000
	N	60	60
READING STRATEGY	Pearson Correlation	.525(**)	1
	Sig. (2-tailed)	.000	.
	N	60	60

** Correlation is significant at the 0.01 level (2-tailed).

The correlation has the positive sign. This means that as one variable increases, the other variable also increases. The observed Pearson r (.52) is statistically significant not only at the .05 but also at the .01 level. Therefore, the null hypothesis could be rejected, and the researcher can conclude that the two variables are related in the population.

A good way to see how closely these two variables are related is to square the correlation coefficient. This index, which is called the coefficient of determination, shows how much of the

variance of reading comprehension ability is in common with the variance of using reading strategies. Since the correlation is 0.52, it means that these two variables have 27.04 percent of their variance in common.

To check this correlation, looking at the scatter graph of the relationship between these variables would be useful. In Figure 1 you can see the result. This figure shows a high level of correlation.

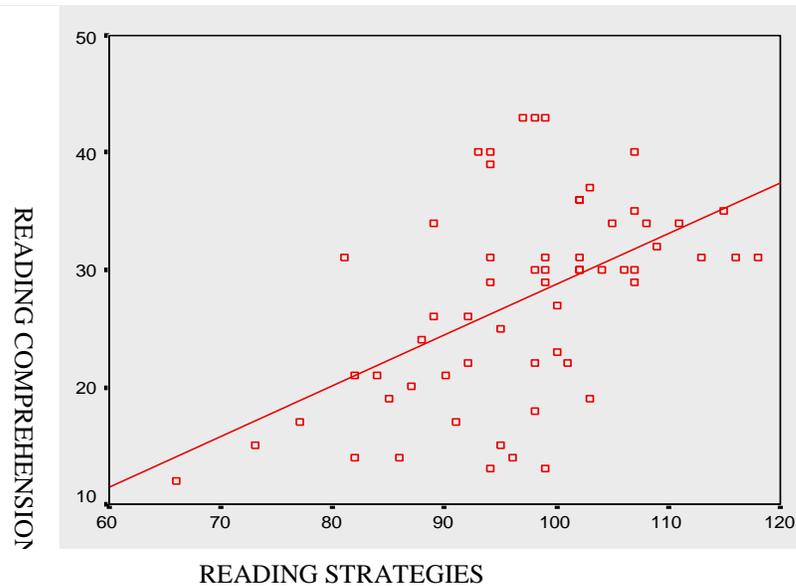


Figure. 1. Correlation between reading strategies and reading comprehension

B. Second Research Question

The second research question was “Is there any difference between the reading strategies used by the successful and the less successful EFL readers at the intermediate level?” The results of independent sample t-test, which was used to find the answer to the second question, are shown in Tables 3 and 4.

TABLE III
 GROUP STATISTICS FOR READING STRATEGIES

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
READING STRATEGY	high	30	102.4000	8.25290	1.50677
	low	30	91.5000	9.33200	1.70378

TABLE IV
 INDEPENDENT SAMPLES TEST FOR READING STRATEGIES

	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
READING STRATEGY	.455	.503	4.792	58	.000	10.9000	2.27447	6.34715	15.45285
			4.792	57.146	.000	10.9000	2.27447	6.34570	15.45430

As it is shown in Table.4 the observed ratio of 4.7 is greater than the expected one at the .05 level, this means that the difference between the groups is greater than the value required to reject the null hypothesis at the .05 level of significance. The value of 4.7 is significant not only at the 0.05 level ($p < .05$) but also at 0.01 level ($p < .01$).

According to table 4 the mean difference is 10.9. This significant difference between the high and low groups indicates that successful and less successful readers are significantly different in terms of using reading strategies. This is shown in Figure 2.

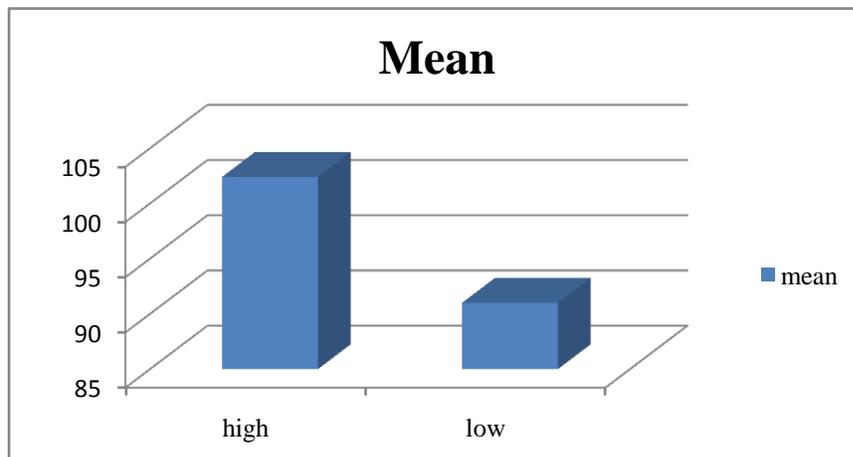


Figure. 2. Mean difference for reading strategies

C. Third Research Question

The third research question was “Is there any difference between the cognitive, metacognitive, and test-taking strategies used by the successful and the less successful EFL readers at the intermediate level?” The results of independent sample t-test, which was used to find the answer to this question, are shown in Tables 5 and 6.

TABLE V
 GROUP STATISTICS FOR COGNITIVE, METACOGNITIVE, AND TEST-TAKING
 READING STRATEGIES

	GROUPS	N	Mean	Std. Deviation	Std. Error Mean
METACOGNITIVE	High	30	9.5333	1.61316	.29452
	Low	30	8.4667	1.75643	.32068
TEST-TAKING	High	30	19.3667	2.80988	.51301
	Low	30	23.0667	2.89986	.52944
COGNITIVE	High	30	73.4333	5.76962	1.05338
	Low	30	59.9667	6.15032	1.12289

TABLE VI
 INDEPENDENT SAMPLES TEST FOR COGNITIVE, METACOGNITIVE, AND TEST-
 TAKING READING STRATEGIES

		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
METACOGNITIVE	Equal variances assumed	.058	.811	2.450	58	.017	1.0667	.43541	.19511	1.93823
	Equal variances not assumed			2.450	57.585	.017	1.0667	.43541	.19497	1.93836
TEST-TAKING	Equal variances assumed	.080	.778	-5.019	58	.000	-3.7000	.73722	-5.17570	-2.22430
	Equal variances not assumed			-5.019	57.942	.000	-3.7000	.73722	-5.17573	-2.22427

COGNITIVE	Equal variances assumed	.201	.656	8.747	58	.000	13.4667	1.53964	10.38474	16.54860
	Equal variances not assumed			8.747	57.765	.000	13.4667	1.53964	10.38447	16.54886

Values of 2.45 for metacognitive reading strategies, -5.01 for test-taking reading strategies, and 8.74 for cognitive reading strategies, which were presented in Table 6, all are significant at the .05 level.

According to Table 6 the mean difference of metacognitive reading strategies is 1.06; the mean difference of test-taking reading strategies is -3.7; and the mean difference of cognitive reading strategies is 13.4. Cognitive and metacognitive ratios had positive signs; this means that readers of the high group used more cognitive and metacognitive strategies than readers of the low group. But cognitive mean difference (13.4) was greater than metacognitive mean difference (1.06), therefore, cognitive strategies made greater distinction between successful and less successful readers than metacognitive strategies. Test-taking strategies ratio was -3.7; it means that readers of the low group used more test-taking strategies than readers of the high group. This is shown in Figure 3.

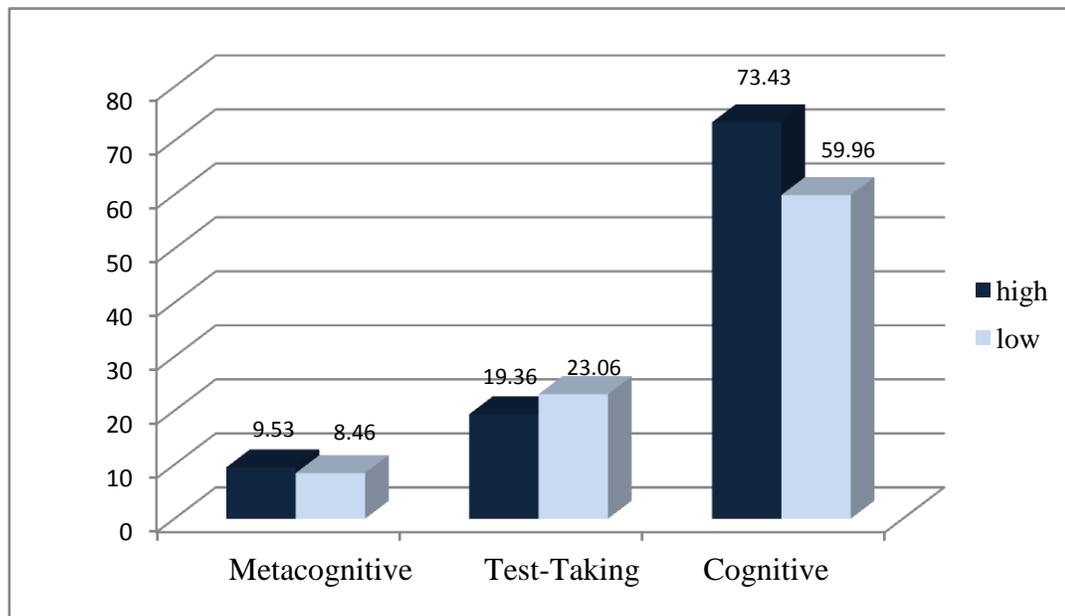


Figure 3. Mean difference for cognitive, metacognitive, and test-taking reading strategies

As it was found in the previous section, the correlation between learners' reading comprehension ability and reading strategies is statistically significant ($r = .52$). Therefore, the students who use reading strategies are better readers than those who do not use them. The other finding of this

study was that good and poor readers were significantly different in terms of using cognitive, metacognitive, and test-taking reading strategies. Although successful and less successful readers were different in terms of these strategies, the point is that this difference is more pronounced in terms of using cognitive ($t = 8.74$) than metacognitive strategies ($t = 2.45$). And in terms of using test-taking strategies ($t = -5.01$) surprisingly less successful readers used test-taking strategies more than successful ones.

Base on the findings of this study, it can be concluded that nowadays besides linguistic knowledge, using reading strategies is a factor that can make a distinction among the readers. It means that if learners seek to improve their reading skill, they need to learn and use reading strategies. When successful and less successful students are different in terms of cognitive strategies, it does not mean that using other strategies does not lead to an achievement in reading comprehension. Maybe in the *context of this study* (Iranian EFL context), cognitive strategies were taken into account more than the other two strategies. In the other contexts the results may be different. It should be mentioned that in the present research only three types of strategies were studied. Since the other reading strategies play important roles in improvement of reading comprehension, they also should be dealt with in further research.

Other studies which were done on reading and reading strategies mostly focused on reading strategy *training* (e.g., Senay Sen, 2009; Sporer et al., 2009). They mostly investigated different methods of strategy training to find the most successful one. In these types of studies subjects greatly improved at the end of the training course compared to the beginning of the course. So they concluded that strategy training should be part of reading comprehension classes to achieve higher reading comprehension ability. The present study focuses more on different types of reading strategies (that successful and less successful readers use) than strategy training.

There are limited numbers of studies which separate reading strategies into parts like cognitive, metacognitive, socioaffective, supporting, and test-taking strategies and study their effect on reading comprehension. As it was stated by Sheorey and Mokhtari (2001), both native and non-native high-reading-ability students show comparable degrees of higher reported usage for cognitive and metacognitive reading strategies than lower-reading-ability students. According to Malcolm (2009), skilled readers are often characterized as more metacognitively aware than less skilled readers. In the present study, like most of the other studies, good readers used cognitive and metacognitive strategies more than weak readers.

Although good and poor readers were significantly different in terms of using cognitive and metacognitive strategies, the degree of this difference was not the same. While the mean difference of high and low group was 13.46 in cognitive strategies, this difference was 1.06 in metacognitive strategies. Comparing cognitive and metacognitive strategies, cognitive strategies can make greater distinction between good and poor readers than metacognitive strategies.

One interpretation could be that participants were much more familiar with cognitive strategies than metacognitive ones. The reason may be that cognitive reading strategies deal with language; and because teachers and students devote most of their time and energy to analyzing the text than what is beyond the text, so students rely more on the text than what they can bring to the text (like their background knowledge). Therefore students learn and use cognitive strategies more than metacognitive ones.

It should be mentioned that, EFL students rely more on their linguistic knowledge and analysis of the text. Being engaged with long and complex English sentences leaves little space to look at

the text as a whole and use metacognitive strategies. In the *context of this study* (Iranian EFL context), cognitive strategies which are text-bound were taken into account more than the metacognitive ones. If metacognitive strategies had been taught and learnt in EFL classes, these strategies would have been as significant as cognitive ones.

In terms of test-taking strategies, Bornholt (2002) demonstrated the contribution of children's test-taking strategies on a test of reading comprehension. While in the present research, test-taking strategies were studied on its own, in most of the other studies test-taking strategies were studied under the shadow of other strategies like cognitive and metacognitive strategies, e.g., Collinsa & Onwuegbuzieb, (2003) proved that coping strategies which have been conceptualized as the cognitive strategy and examination- taking strategies were statistically significant to the learning modalities; Brunner et al., (2007) showed that only the combined effects of pretesting and coaching for taking the test have substantial positive effects on student performance; Hong and Peng (2008) showed that students' perceived test value had a significant direct effect on motivational and metacognitive regulation as well as an indirect effect on test performance; Cole et al. (2008) stated that the task value variables usefulness and importance significantly predicted test-taking effort and performance for the test. In the present study test-taking strategies were studied besides cognitive and metacognitive strategies. The results showed that less successful readers used test-taking strategies more than successful ones. This result is somehow different with what was found in the other studies.

One explanation could be that the less successful readers, who did not know nor did not use cognitive and metacognitive strategies, made use of test-taking strategies to compensate for this shortcoming. It means that instead of using cognitive and metacognitive strategies to comprehend the text, they used test-taking strategies to answer the questions. This is not a negative point, but the point is that this group of students read the text just to answer the questions, so the purpose was not to comprehend the text.

However the students who used more test-taking strategies were still less successful group. There is not a clear reason, but it is supposed that students who consider the text as a mixture of the answers of reading comprehension questions cannot recognize the important parts of the text, relate the different parts of the text to each other, have an overall picture of the text in mind, relate what they read to their background knowledge, and finally comprehend the text. This group of students, who use test-taking strategies more than other strategies, may just answer the direct questions correctly (by finding the keywords). Maybe it is due to the fact that the low group students just want to answer the questions to get a passing mark and are not interested in reading or maybe this is how they compensate for lack of knowledge. Reading just for answering the following questions is far from extracting meaning from the text, interactive reading, and psycholinguistic guessing game. Devoting more attention to test-taking strategies without using cognitive and metacognitive strategies may mislead the readers and result in poor reading comprehension.

Since the difference between successful and less successful readers was statistically significant in terms of test-taking strategies ($t = -5.01$), it hardly can be claimed that less successful readers chose items related to test-taking strategies (in the reading strategy questionnaire) by chance. Therefore, besides cognitive and metacognitive strategies, test-taking strategies can make a real distinction among readers. The essential role of test-taking strategies in the TOEFL test cannot

be ignored, so this type of strategies should be taught systematically to the students of high group which enjoy high cognitive and metacognitive strategies but less test-taking strategies.

IV. Conclusion

Based on the results of this study, it can be concluded that readers who use reading strategies frequently and adequately are more successful readers than readers who do not use them. So the significant role of reading strategies should be taken into account in improvement of reading skill.

Among three reading strategies which were investigated in this study (cognitive, metacognitive, and test-taking), cognitive strategies made the greatest distinction between successful and less successful readers. As it was discussed the reason maybe the present nature of reading, which is text-bound, in general and in Iranian EFL context in particular. The amount of the time and energy devoted to metacognitive and test-taking strategies is not enough in these contexts. Successful readers used cognitive and metacognitive strategies more than less successful readers. But, in terms of test-taking strategies, less successful readers used these strategies more than successful readers. It seems that less successful readers used test-taking strategies to compensate for lack of knowing and using cognitive and metacognitive strategies.

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Appendix A

Reading Strategies Questionnaire

Items 7, 14, and 27 are metacognitive reading strategies, items 16, 17, 18, 21, 23, 24, and 25 are test-taking strategies, and the remaining items are cognitive reading strategies. Please read each item and tick (✓) **Always, Often, Sometimes, or Never** in the answer sheet.

1. I first skim an English passage (read over the passage quickly) then go back and read carefully.
2. I look up words in my dictionary as a last resort.
3. When I look up a word in my dictionary, I read the sentence in which the word has been used.
4. I do care about meaning more than grammar.
5. I use contextual clues for better comprehension.
6. The passage title is important to me.
7. I use my background knowledge to comprehend the passage.
8. While reading, I try to guess what comes next in the coming paragraphs.
9. I first try to get the overall meaning then go to the details.
10. I find the meaning of an English word by dividing into parts that I understand.
11. I try not to translate word-for-word.
12. I make summaries of information that I read in English.
13. To understand unfamiliar English words, I make guesses.
14. I look for opportunities to read as much as possible in English.
15. After guessing, I look for clues in the passage that lend support to my guesses.
16. As I read, I know what kinds of questions are usually asked at the end of the passage.
17. First I read the passage, and then go to the questions.
18. I first read the questions, and then go to the passage.
19. I underline the key words or phrases as I read.
20. As I read, I care about the key words such as therefore, not only..., but also..., then, although, etc. which are indications of similarities, differences, contrasts, comparisons, etc.
21. As I read, I keep in my mind the typical questions that follow the passages.
22. I put numbers to the main points or ideas of the author of the passage.
23. I do not exert my personal interpretation while answering the reading comprehension questions.

24. I go back to the passage and check my answers after answering the reading comprehension questions.
25. As the last resort in reading comprehension tests, if I cannot find the answer (multiple-choice questions), I begin to delete the alternatives that are irrelevant to the passage get to the most appropriate and logical answer.
26. I do not worry if a reading passage is on a topic that I am unfamiliar with.
27. I try to make a meaningful relationship between what I read and my background knowledge.
28. To get the overall meaning, I begin analyzing individual words and grammatical structures.
29. Before reading, I try to guess what would be discussed in the passage.
30. To infer what has been implicitly said in the passage, I attend to all sentences and the context.
31. I can rewrite the information in the passage with my own words.
32. As I read, I write in the margin what I understand or what occurs to my mind.
33. I do not leave any answers blank on my answer sheet.
34. I use pictures for better comprehension, if any.

Appendix B

Validity and Reliability of the Reading Strategies Questionnaire

Construct Validation of the Reading strategies Questionnaire

Factor Analysis

For the purpose of construct validity of new inventory and to compare the results with what literature offers, factor analysis was run to: 1) find out how much consistency exists between the strategies found in literature and categories factor analysis revealed, and 2) to detect the subcategories; here the items describing reading behavior, under each category and compare them with subsumed order in literature.

To run factor analysis 225 EFL learners filled out the original questionnaire 34 items. The analysis showed only 12 items had merged into 3 factors; namely factor 1, factor 2, and factor 3, and each factors included 4 items: (9,12,19,22/ 8,16,23,29/ 2,3,14,31, respectively). Scrutinizing the items in each category, it became apparent that, as far as factor 1 and 3 of the factor analysis concerned, there was a reasonable consistency between literature and factor analysis. All the items under factor 1 were cognitive reading strategies. As with factor 3, out of four items, there are three cognitive strategies and one metacognitive strategy. When it goes to factor 2, two cognitive and two test-taking strategies have merged into one factor. To go with factor analysis, this factor should be studied in its own right as a whole and independent of the literature. That is to say, it should be looked at as a factor dealing with a construct of reading comprehension through its items.

But how these inconsistencies and mismatches are to be observed? What is the final word of justification? Which categorization is more reliable and valid to be adapted and followed? Literature and logic or factor analysis?

As it is with other areas of debate, a moderate approach exists: to go both ways and compare the results. This study followed both ways independently in order to compare the results.

Reliability Estimate of the Reading Strategies Questionnaire

As with the reliability of the reading strategies inventories, the strategy scores were processed by SPSS for their Cronbach Alpha reliability index. The Cronbach reliability index for the original and the validated questionnaire turned out to be 0.73 and 0.67 respectively which, statistically speaking, are high indices.

Table 1 represents the reliability indices of the three categories; first as found in literature, and second, as detected by factor analysis.

TABLE I
 THE RELIABILITY INDICES OF THE READING STRATEGIES AS IN
 LITERATURE AND IN FACTOR ANALYSIS

Literature	No. of items	Reliability
Cognitive	24	.67
Metacognitive	3	.38
Test-taking	7	.27
Factor Analysis		
Factor1	4	.65
Factor 2	4	.53
Factor 3	4	.50

A group of university EFL learner divided to Experimental Group and Control Group each with 40 and 41 subjects who took pretest and posttest including two types of reading strategy questionnaires (base on literature and factor analysis) and reading comprehension test. Both groups were initially homogeneous. After treatment -that was reading strategy training- two independent calculations were done comparing the results while going with the categories of literature and factor analysis. For each category, then, the mean score of each subject was computed. Table 2 shows the subjects' means on each category in the EG regarding the literature (cognitive, metacognitive, and test-taking strategies) before and after the instruction, and table 3 represents their mean scores on the factors given by factor analysis (factor1, factor 2, and factor 3).

TABLE II
 THE LEARNERS' MEAN IN THE EG ON THE CATEGORIES OF LITERATURE

Cognitive		Metacognitive		Test-taking	
Pre	post	Pre	post	Pre	post
51.82	46.2	5.92	5.65	17.35	15.27

TABLE III
 THE LEARNERS' MEAN IN THE EG ON THE CATEGORIES OF FACTOR ANALYSIS

Cognitive		Metacognitive		Test-taking	
Pre	post	Pre	post	Pre	post
9.30	7.87	9.92	8.35	9.92	8.33

Similarly, the same calculations were carried out for the cg as shown in tables 4 and 5.

TABLE IV
 THE LEARNERS' MEAN IN THE CG ON THE CATEGORIES OF LITERATURE

Cognitive		Metacognitive		Test-taking	
Pre	post	Pre	post	Pre	post
52.56	55.36	6.17	6.97	18.29	19.21

TABLE V
 THE LEARNERS' MEAN IN THE CG ON THE CATEGORIES OF FACTOR ANALYSIS

Cognitive		Metacognitive		Test-taking	
Pre	post	Pre	post	Pre	post
8.87	9.24	10.80	10.70	9.65	10.04

A relatively large number of independent and paired t- test were done to investigate the possible differences in the strategies choice before and after the instruction in both groups.

Independent T-test Regarding the Literature

-Pretest

The participants of the research were needed to be studied in their initial similarities or differences in terms of reading strategies choice in three areas of cognitive, metacognitive, test-taking strategies. This, in turn, was to check the validity of the following hypothesis:

H0: Before the instruction, there is not a statistically significant difference between the CG and the EG in three areas of cognitive, metacognitive, test-taking strategies.

The observed *t* values happened to be .60, .67, and 1.32 respectively all of which were smaller than their corresponding theoretically-developed value; i.e., 2.000, implying that the above hypothesis held true. In other words, the CG did not differ significantly with the EG in terms of initial reading strategies bank.

-Posttest

Due to the treatment, the EG was expected to possess more reading strategies in comparison with the CG at the end of the study. This could be proved true if the below nondirectional hypothesis were rejected.

H0: After giving treatment to the EG and placebo to the CG, there is not a statically significant difference between these groups in three areas of cognitive, metacognitive, test-taking strategies. Statistical analyses revealed that the EG was superior in all three areas compared to the CG. The observed *t* values appeared to be 4.72, 3.56, and 4.92 respectively.

Independent T-test Regarding the Factor Analysis

As discussed earlier, factor analysis gave three categories each of which contained four reading behaviors. Of these factors, factor 1 was the only one that resembled a category taken from Literature; cognitive. It was decided, therefore, to go either way and compare the results.

-Pretest

H0: before the instruction, there is not a statistically significant difference between the CG and the EG in three categories of 1, 2, and, 3.

Observed *t* values turned out to be .72, 1.66, and .61 for factors 1, 2, and 3 respectively; thus, the above hypothesis was to be accepted. Put it in other words, even when the categories of factor analysis were concerned, the learners seemed to be initially homogeneous in their reading strategies repertoires.

-Posttest

H0: After giving treatment to the EG and placebo to the CG, there is not a statistically significant difference between these groups in three factors, namely, 1, 2, and, 3.

This hypothesis was rejected at .05 level of probability, indicating that the EG enjoyed more reading strategies after the treatment compared to the CG.

Matched T-test Regarding the Literature

A set of comparisons were needed to investigate the effects of the treatment on the EG and that of the placebo on the CG. So the reading strategies of the EG in the pretest was to be compared with their reading strategies in the posttest. This was the case with the CG as well.

H₀: After the treatment, the reading strategies of the EG are not more than their reading strategies in the pretest in three areas of cognitive, metacognitive, test-taking strategies.

The t values were found to be 5.06, 0.87, and 4.16 for the cognitive, metacognitive, test-taking strategies respectively. As it is seen, the subjects in the EG appear to have benefited cognitive and test-taking strategies instruction but not metacognitive. The reason might be partly lie in the fact that only a few number of metacognitive strategies were included and taught; just three. Moreover, the language proficiency level of the learners in the EG should be taken into consideration. Metacognitive strategies are mostly employed by high proficient learners not intermediate or fresh learners. As a result, the above hypothesis needs to be revised and slightly modified. Then, a directional hypothesis would be achieved which is confirmed at .05 level of probability.

H₁: After the treatment, the reading strategies of the EG are more than their reading strategies in pretest in two areas of cognitive and test-taking strategies.

The same computations were done to observe if there was any difference in the reading strategies of the CG after receiving placebo. The blow hypothesis was established to be refuted or advocated.

H₀: after the placebo, the reading strategies of the CG are not more than reading strategies in pretest in three categories of cognitive, metacognitive, and test-taking strategies.

Using paired t-test, the observed t values turned out to be 1.49, 2.05, and 1.33 for cognitive, metacognitive, and test-taking strategies. The corresponding t value with df= 40 is 2.021. Thus, it became clear that the above H₀ held true with categories 1 and 3 but not with category 2. In other words, after receiving placebo, the subjects in the CG seemed not to differ significantly in their cognitive, metacognitive, and test-taking strategies because the critical value was larger than the observed value. They, nonetheless, appeared to be different in their metacognitive reading strategies in the posttest. Yet the difference had not influenced the overall reading comprehension ability. Also, the difference might be quite unsystematic and due to chance.

Matched T-test Regarding Factor Analysis

All the statistical analyses done, while going with literature, were carried out with the categories obtained on the basis of factor analysis.

H0: After the treatment, the reading strategies of the EG are not more than their reading strategies in pretest in factors 1, 2, and 3.

All the observed values of t exceeded their corresponding critical value at .05 probability level with $df = 39$. The conclusion to be drawn, thus, was that, after being taught the reading strategies, the EG appeared to be better in the posttest in all three categories.

What about the CG while going with factor analysis? Had their reading strategies choice changed at the end of the program? To answer these questions, similar analyses were done for the CG too. H0: After the placebo, the reading strategies of the CG are not more than their reading strategies in pretest regarding factor 1, 2, and 3.

All the observed t values were smaller than the critical value implying that the above hypothesis was confirmed. That is, the reading behavior of the CG in the posttest had not differed significantly compared with the pretest.

In brief, then, it was found that:

1. The CG and the EG were initially similar in terms of their reading behaviors, going either with Literature or factor analysis.
2. After treatment, the EG was superior in all three areas or factors in comparison with the CG. This held true both with Literature and with factor analysis.
3. After receiving the treatment, the EG appeared to have benefited teaching cognitive and test-taking strategies but not metacognitive. The CG, conversely, revealed some differences in their metacognitive strategies choice in the posttest but not in cognitive and test-taking strategies. This was the case with the frame Literature provided.
4. As with factor analysis, the EG showed significant difference in their reading strategies after the treatment in all factors. Yet, CG did not manifest statistically significant differences.

Matched t-test was used to determine if treatment had positive effect on learner. The results are as follows:

1. Matched t-test regarding the literature showed that EG benefit cognitive and test-taking not metacognitive and CG not differ in cognitive and test-taking but differ in metacognitive.
2. Matched t-test regarding the factor analysis showed that EG are better in posttest in all three categories.

In his study, Mazlumzavaragh showed that the questionnaire which he made base on literature is reliable. By the means of factor analysis he proved the construct validity of the questionnaire. Since the questionnaire is adjusted with Iran's EFL situation, it could be claimed that the questionnaire has validity.