The Measurement of Strategic Competence in Reading Comprehension Among Iranian EFL Learners

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Abstract: This study considers the question of the measurement of strategic competence in reading comprehension among Iranian EFL learners. It is inspired from Bachman's (1990) conception of strategic competence as the learners' store of metacognitive strategies available for use in the completion of reading comprehension test. The further concern was to scrutinize the extent to which strategic competence affected the participants' test performance. 120 students - both male and female – were selected from Shayestegan high school in Izeh, TEFL students studying at Izeh Islamic Azad University and finally M.A students from Khozestan Science and Research Branch. The population was divided into low, intermediate, and high levels based on their scores in a proficiency test. The subjects took both a reading comprehension test and a metacognitive strategy questionnaire successively in three sessions. The data was run through a One-way ANOVA to compare learners' means together across the three proficiency levels. The findings manifested that the participants at the high level of reading proficiency used metacognitive strategies more frequently than did those at the low and intermediate levels of reading proficiency in the test-taking setting. The findings also revealed a positive linear relationship between metacognitive awareness and the participants' test performance. The findings revealed the necessity for designing the instructional programs focusing on both linguistic and strategic aspects of language learning in a balanced way to improve reading ability of L2 learners. The findings indicate that the true score of language learners depends on linguistic and strategic aspects of test-taking. Thus, the findings recommend language teachers to interpret test scores with great care to make fair decisions about the actual ability of test takers. In addition, the findings encourage curriculum planners and language teachers to design appropriate instructional materials and adapt effective teaching approaches to improve reading comprehension.

Keywords: strategic competence, metacognitive strategies, cognitive strategies, proficiency, reading strategies

1. Introduction

Unlike speaking, reading is not something that every individual learns to do. An enormous amount of time, money, and effort is spent teaching reading in elementary and secondary schools around the world. In fact, it is probably true to say that more time is spent on teaching reading than on any other skill. For hundreds years, being literate has been the mark of the educated person. One of the greatest indictments of many education systems is that some children spend up to twelve years in school and do not become literate (Nunan, 1999, p. 249). To enter any literate society, students must know how to learn from reading in order to succeed. Research in English language reading suggests that readers use a variety of strategies to assist them with the acquisition, storage, and retrieval of information (Rigney, 1978).

Reading strategies indicate how readers achieve a task, what textual cues they attend to, how they make sense of what they read, and what they do when they do not understand (Block, 1986).

Most studies on second language reading have manifested that second language learners use a set of competencies for effective reading comprehension to make a full sense out of text being read (Shrum & Glisan, 2000; Singhal, 2001; Brantmeier, 2002; Saricoban, 2002). The four major competences are grammatical competence, sociolinguistic competence, discourse competence, and strategic competence, assisting second language learners in accomplishing a multitude of reading tasks. Since the development of cognitive psychology in 1970s, strategic competence has got a wider significance encouraging many researchers to work on the underlying process of language learning and test taking (e.g. Dreyer & Oxford, 1996; Cohen & Dörnyei, 2002; Peacock & Ho, 2003; Su, 2005).

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Of the most commonly and recently used types of competencies, Bachman (1990) described strategic competence as an essential aspect of communicative language ability consisting of assessment, planning, and execution strategies. Bachman's description of strategic competence is more dynamic than the earlier descriptions dealing with the compensatory functions of strategic competence, particularly in interlanguage setting (e.g. Canale & Swain, 1980; Canale, 1983; Farech & Kasper, 1983).

To summarize, the general problem approached in this study is the measurement of strategic competence in foreign language learners as it applies to the completing of reading comprehension test. The purpose of this study was, in effect, to validate a means of measuring the strategic competence in reading comprehension among Iranian learners which might serve language testers and language teachers.

The findings can be significant due to comparing and contrasting metacognitive strategic patterns of language learners at different levels of reading proficiency revealing the gap between more proficient and less proficient learners.

2. Review of the Literature

In an early study on the issue, Lachini (1997) administrated O'Malley and Chamot's (1990) questionnaire to sixty Iranian students. He found that Iranian students use cognitive and metacognitive strategies more than other learning strategies and intermediate to advanced students make use of learning strategies more than other students. Tajedin (2001) investigated the use of learning strategies, gender, language proficiency and learning situation. He used Oxford's eighty-item questionnaire (1990) and found that Iranian students use metacognitive strategies more frequently and affective strategies less frequently than other learning strategies. Also he found that men and women were not different in their use of learning strategies.

Gerami and Baighlou (2011), referring to language as a socially mediated phenomenon proved the logic of their study which was a replication of a foreign study with the aim of extracting Iranian EFL learners' learning strategies to make a comparison between the students of different proficiencies. In their study, using Strategy Inventory for Language Learning (SILL), they examined the application of language learning strategies by successful and unsuccessful Iranian EFL students. They found that successful EFL students use a wider range of learning strategies (often metacognitive) and different from those often preferred by their unsuccessful peers (surface level cognitive strategies).

Sheorey and Mokhtari (2001) examined differences in awareness of metacognitive strategies among ESL and native English speakers (of three hundred subjects, approximately half were ESL and half were native English-speakers), with average ages of 21.75 and 19.14 years, respectively, who were studying at a university in the US. They were given a survey asking questions regarding their awareness of reading strategies. Of the ESL subjects, more than half were from Asian regions, about 6% from the Middle Eastern areas, about 4% from Latin America, and the rest from the other places in the world. The findings revealed that both ESL and native English readers in the more advanced groups were applying metacognitive strategies more often than those who were in the less advanced groups. The study also showed a correlation between high-proficiency students and the high frequency use of the strategies.

Barnett (1988) investigated the effects of metacognitive awareness and strategy use on reading comprehension. The subjects were 278 university students enrolled in a French course. They were required to complete a prior knowledge questionnaire and read an unfamiliar passage. They then wrote a recall composition on the passage. The students then completed a questionnaire on their perceived strategy use. Findings seemed to indicate that there was a linear relationship between strategy use and reading comprehension. Students who used better strategies in reading performed better than students who did not use effective strategies. The results of the metacognitive studies seem to show that there is a positive correlation between metacognitive awareness and reading ability (Carrell 1989, Barnett 1988).

Purpura (1997) worked on Bachman's (1990) classical framework of language use and considered strategic competence as a set of metacognitive strategies divided into the three groups of planning, monitoring, and evaluating strategies. Planning strategies are applied for future actions and goal attainment. Good examples of planning strategies are goal setting, overseeing tasks, and planning future actions beforehand. Planning strategies regulate test takers' thinking process to allocate resources, determine the order of the steps, and set the intensity or the speed of accomplishing a task. Monitoring strategies refer to the strategies used for checking ongoing comprehension or ongoing performance such as noticing comprehension failure and double-checking comprehension. Monitoring strategies are test takers' deliberate actions required to identify a current task, check the current progress of accomplishing the task, monitor their thinking and performance, and predict the outcome of the progress. Evaluating strategies are used for evaluating the past and current actions. Good examples of evaluating strategies are assessing the difficulty level of language task, checking the progress, and evaluating

the performance and product accuracy.

Metacognitive awareness in reading comprehension is concerned with readers' conscious awareness of strategic reading processes, reading strategy repertoires, and actual utilization of reading strategies to maximize text comprehension (Carrel et al., 1998; Forrest-Pressley & Waller, 1984; Sheorey & Mokhtari, 2001; Zhang, 2001). Reading comprehension is a metacognitive process in which many strategies, as Alexander and Jetton (2000) asserted, are "procedural, purposeful, effortful, willful, essential, and facilitative in nature" (p. 295). While applying metacognitive strategies, readers devote more attention to controlling, monitoring, and evaluating reading process (Pressley, 2000; Pressley et al., 1995). Readers with stronger metacognitive awareness are able to interpret reading tasks more effectively in terms of context requirements. Effective readers select particular strategies relevant to reading purposes, task demands, and preferred cognitive styles. They monitor the process of comprehension, evaluate the effects of selected strategies, and change the strategies where necessary (Cohen, 1998; Hudson, 2007; Paris et al., 1994; Pressley & Afflerbach, 1995; Zhang, 2008).

Thus, the present study is an attempt to measure the strategic competence in reading comprehension of Iranian students at different levels of reading proficiency. In addition, as reading comprehension is of crucial importance in many programs at the universities in many parts of the world, the findings can provide useful information helping policy makers, curriculum planners, syllabus designers, language teachers, and test designers tailor effective instructional programs, syllabuses, teaching approaches, and tests to the particular needs of the students. Analyzing the differences between more proficient and less proficient language learners in the use of metacognitive strategies can help English teachers as well as curriculum planners design effective instructional syllabuses and teaching approaches to fill the gap between learners.

In light of the points made above, this study aims to provide answers to the following research questions:

1. Does level of reading proficiency affect the use of metacognitive and cognitive strategies in reading comprehension test performance?
2. Is there any relationship between metacognitive and cognitive strategies among Iranian EFL readers?
3. Is there any relationship between using metacognitive strategies and reading comprehension scores among Iranian EFL readers?
4. Is there any relationship between using cognitive strategies and reading comprehension scores among Iranian EFL readers?

The above research questions are put in the following research null hypotheses as follow:

1. Level of reading proficiency does not affect the use of metacognitive and cognitive strategies in reading comprehension test performance.

2. There is no significant relationship between metacognitive and cognitive strategies among Iranian EFL readers.

3. There is no significant relationship between using metacognitive strategies and reading comprehension scores among Iranian EFL readers.

4. There is no significant relationship between using cognitive strategies and reading comprehension scores among Iranian EFL readers.

3. Method
In this section, the participants, instruments, data collection procedures, and data analysis are discussed.

3.1 Participants
The research sample was comprised of 120 participants (40 males and 80 females). The participants were selected from three proficiency levels: 40 out of 80 pre-university at Shayestegan high school in Izeh, 50 out of 70 TEFL students studying at Izeh Islamic Azad University and finally 30 out of 50 students from Science and Research Khozestan Branch. 120 students were randomly selected. The participant ages ranged from 17 through 36 in this study. The participants of this study were recruited from 120 Iranian EFL learners, based on their scores in proficiency test; the participants were divided into the three levels of high, intermediate, and low reading proficiency. The frequency and percentage of the participants across the three levels of reading proficiency are manifested in Table 3.1.

Table 3.1 *Frequency and percentage of the participants*

Level of Reading proficiency	Frequency	Percent	Valid Percent	Cumulative Percent
Low	40	33.3	33.3	33.3
Intermediate	50	41.7	41.7	75.0
High	30	25.0	25.0	100.0
Total	120	100.0	100.0	

As demonstrated in Table 3.1, the students at the intermediate level of reading proficiency formed the highest proportion (41.7 %). The students at the low and high levels of reading proficiency formed the smaller proportions of the accessible participants. In the table above presents the number of the three proficiency groups as follows: high learners 30, intermediate learners 50, and low learners 40.

3.2 Instruments
The following research instruments were used to collect data in the study:
3.2.1 Nelson proficiency test: The prime data collection instrument is the Nelson proficiency test developed by Fowler & Coe (1976). Fifty items of Nelson proficiency test were applied to determine the homogeneity of the sample. Nelson proficiency test had already been validated and the reliability of this test determined by the KR 21 formula was 0.76. The pre-test in present study was Nelson proficiency test. This multiple-choice test comprised cloze passages, vocabulary, structure, and pronunciation.

3.2.2 Metacognitive and Cognitive Strategy Questionnaire
A metacognitive strategy questionnaire derived from Phakiti's (2003) metacognitive strategy questionnaire was utilized in this study. The questionnaire consisted of 30 statements, contextualizing the use of the three distinct subcategories of planning, monitoring, and evaluating metacognitive strategies. The questionnaire was organized on a 5-point Likert scale, in which the participants had to indicate the frequency of using each strategy in the test-taking process through selecting one of the following adverbs of frequency:
a) never 1 b) seldom 2 c) sometimes 3 d) often 4 e) always 5
The reliability index of the questionnaire was calculated by using Cronbach's alpha formula. The reliability index was (r = 0.91), which was high and acceptable.

3.2.3 Reading Comprehension Test
One reading comprehension test was designed for each level. Each test was composed of four passages and each passage was followed by five multiple-choice questions. The average KR21 reliability of the reading comprehension test, designed for low level,

was estimated to be, **r=0.86**, for the intermediate level test it was estimated to be **r=0.83**, and for the high level test the average reliability was estimated to be **r=0.77**.

3.3 Procedure
In order to select language learners from different proficiency levels, in first session Nelson proficiency test (Fowler & Coe, 1976) was administered to one hundred and twenty participants. This enabled learners into proficiency levels of low, intermediate, high levels. The time allotted to the test takers was 30 minutes to answer 50 multiple-choice questions on this test. The total score of test was 20 (the point allocated to each correct item was 0.4 of a score). The mean and standard deviation (SD) of participants' scores were used as the criterion for the classification of the subjects. Students whose score fell between 1 SD below and 1 SD above the mean score were taken as the Intermediate group. Those whose score fell below 1 SD were regarded as the low group. Those whose score fell above 1 SD were picked up as high group. According to the Flesch Readability formula, the researcher was selected different texts for three groups of proficiency levels. All the participants took the reading test and responded the metacognitive strategy questionnaire successively in one session. The time allotted to take the test was 55 minutes, and the dedicated time to respond the questionnaire was 15 minutes. Prior to answering the test and questionnaire, the participants were briefed on the structures of the test and questionnaire and the way to answer them.

3.4 Data Analysis
The statistical procedures used in the study were Cronbach's alpha, descriptive statistics, one-way analysis of variance, and Pearson product moment correlation coefficient through using the 21th version of SPSS software.

4. Results
Reading Proficiency, Metacognitive and Cognitive Strategies:
To explore the first research question with regard to the level of reading proficiency affect the use of metacognitive and cognitive strategies in reading comprehension test performance. The descriptive statistics were calculated and presented in Table 4.1.

Table 4.1 *Descriptive Statistics for Using Metacognitive Strategies by three Groups of Proficiency*

Strategies	Proficiency	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
						Lower Bound	Upper Bound		
Overall metacognitive strategies	Low	40	2.9250	.94962	.15015	2.6213	3.2287	1.34	4.31
	Intermediate	50	3.2600	.81471	.11522	3.0285	3.4915	1.78	4.95
	High	30	3.9000	.41347	.07549	3.7456	4.0544	2.52	4.93
	Total	120	3.3083	.86553	.07901	3.1519	3.4648	1.34	4.95

Strategies	Proficiency	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Min	Max
Planning strategies	Low	40	3.2750	.88935	.14062	2.9906	3.5594	1.85	4.42
	Intermediate	50	3.4200	.69618	.09846	3.2221	3.6179	1.90	4.92
	High	30	3.8333	.46234	.08441	3.6607	4.0060	2.25	4.56
	Total	120	3.4750	.74697	.06819	3.3400	3.6100	1.85	4.92
Monitoring strategies	Low	40	2.8500	.78707	.12445	2.5983	3.1017	1.95	4.83
	Intermediate	50	3.4200	.92896	.13138	3.1560	3.6840	1.77	5.00
	High	30	4.0000	.45447	.08297	3.8303	4.1697	2.20	4.83
	Total	120	3.3750	.89480	.08168	3.2133	3.5367	1.77	5.00
Evaluating strategies	Low	40	3.1000	.41528	.06566	2.9672	3.2328	2.12	4.83
	Intermediate	50	3.2000	.48401	.06845	3.0624	3.3376	2.16	4.94
	High	30	3.5333	.89014	.14773	3.2312	3.8355	2.40	5.00
	Total	120	3.2500	.58428	.05334	3.1444	3.3556	2.12	5.00

As shown in Table 4.1, Overall metacognitive strategies were used more frequently by the high proficiency test takers (M=3.9000) and less frequently by the Intermediate (M=3.2600) and low proficiency test takers (M=2.9250). As for the three subcategories of metacognitive strategies, the mean score of using planning strategies was the highest (M=3.4750), whereas the mean score of using evaluating strategies was the lowest (M=3.2500) for the total participants. The high proficiency group got the highest mean scores in using overall strategies (M=3.9000), planning strategies (M=3.8333), monitoring strategies (M=4.0000), and evaluating strategies (M=3.5333). In comparison, the low proficiency group got the lowest mean scores in using overall strategies (M=2.9250), planning strategies (M=3.2750), monitoring strategies (M=2.8500), and evaluating strategies (M=3.1000). To probe the significant differences among the mean scores of the three groups of reading proficiency in using metacognitive strategies, a one-way analysis of variance was run.

Table 4.2 *One-way ANOVA for Using Metacognitive Strategies*

Strategies		Sum of Squares	df	Mean Square	F	Sig.
Overall metacognitive strategies	Between Groups	16.497	2	8.248	13.283	.000
	Within Groups	72.651	117	.621		
	Total	89.147	119			
Planning strategies	Between Groups	5.603	2	2.802	5.392	.006
	Within Groups	60.794	117	.520		
	Total	66.398	119			
Monitoring strategies	Between Groups	22.845	2	11.423	18.450	.000
	Within Groups	72.435	117	.619		
	Total	95.280	119			
Evaluating strategies	Between Groups	3.433	2	1.717	5.400	.006
	Within Groups	37.192	117	.318		
	Total	40.625	119			

As manifested in Table 4.3, significant differences were found among the mean scores of the three proficiency groups in using overall metacognitive strategies $F_{(2,117)}=13.283$, P= .000 ; planning strategies $F_{(2,117)}=5.392$, P= .006 ; monitoring strategies $F_{(2,117)}=17.450$, P= .000 ; and evaluating strategies $F_{(2,117)}=5.400$, P= .006.

To compare the mean differences in pairs, a Tukey HSD test was run. The results are presented in Table 4.3.

Table 4.3 *Multiple Comparisons between the mean scores of the three proficiency groups*

Dependent variable	(I) Reading level	(J) Reading level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Overall metacognitive strategies	Low	Intermediate	-.33500	.16716	.116	-.7318	.0618
		High	-.97500*	.19032	.000	-1.4268	-.5232
	Intermediate	Low	.33500	.16716	.116	-.0618	.7318
		High	-.64000*	.18198	.002	-1.0720	-.2080
	High	Low	.97500*	.19032	.000	.5232	1.4268
		Intermediate	.64000*	.18198	.002	.2080	1.0720
Planning strategies	Low	Intermediate	-.14500	.15291	.611	-.5080	.2180
		High	-.55833*	.17410	.005	-.9716	-.1450
	Intermediate	Low	.14500	.15291	.611	-.2180	.5080
		High	-.41333*	.16647	.038	-.8085	-.0181
	High	Low	.55833*	.17410	.005	.1450	.9716
		Intermediate	.41333*	.16647	.038	.0181	.8085
Monitoring strategies	Low	Intermediate	-.57000*	.16691	.003	-.9662	-.1738
		High	-1.15000*	.19004	.000	-1.6011	-.6989
	Intermediate	Low	.57000*	.16691	.003	.1738	.9662
		High	-.58000*	.18171	.005	-1.0114	-.1486
	High	Low	1.15000*	.19004	.000	.6989	1.6011
		Intermediate	.58000*	.18171	.005	.1486	1.0114
Evaluating strategies	Low	Intermediate	-1.0000	.11960	.681	-.3839	.1839
		High	-.43333*	.13617	.005	-.7566	-.1101
	Intermediate	Low	.10000	.11960	.681	-.1839	.3839
		High	-.33333*	.13021	.031	-.6424	-.0242
	High	Low	.43333*	.13617	.005	.1101	.7566
		Intermediate	.33333*	.13021	.031	.0242	.6424

*. The mean difference is significant at the 0.05 level.

As presented in table 4.4, significant differences were found between means scores of the high and low proficiency groups in the use of metacognitive strategies (I-J=.97500*, P=.000); planning strategies (I-J=.55833*, P= .005) ; monitoring strategies (I-J=1.15000* , p= .000) ; and evaluating strategies (I-J=.43333* , p= .005).

Table 4.4 *Descriptive Statistics for Using Cognitive Strategies by Three Groups of Proficiency*

Strategies	Proficiency	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Min	Max
Overall cognitive strategies	Low	40	3.8000	.55386	.08757	3.6229	3.9771	1.38	4.37
	Intermediate	50	3.5700	.70764	.10008	3.3689	3.7711	2.35	4.76
	High	30	3.2000	.59348	.10835	2.9784	3.4216	13.2	4.36
	Total	120	3.5542	.66679	.06087	3.4336	3.6747	1.32	4.76
Comprehending strategies	Low	40	3.8408	.45444	.07185	3.6954	3.9861	2.37	4.96
	Intermediate	50	3.5600	.73488	.10393	3.3512	3.7688	2.00	4.89
	High	30	3.3667	.62506	.11412	3.1333	3.6001	1.75	4.63
	Total	120	3.6053	.64739	.05910	3.4882	3.7223	1.75	4.96
Memory strategies	Low	40	3.5000	.76183	.12046	3.2564	3.7436	2.24	5.00
	Intermediate	50	3.1900	.67110	.09491	2.9993	3.3807	1.92	4.67
	High	30	2.8333	.53225	.09718	2.6346	3.0321	1.82	4.58
	Total	120	3.2042	.71335	.06512	3.0752	3.3331	1.82	5.00
Retrieval strategies	Low	40	3.7500	.59717	.09442	3.5590	3.9410	2.45	4.98
	Intermediate	50	3.4800	.90999	.12869	3.2214	3.7386	1.85	4.93
	High	30	3.0000	1.05641	.19287	2.6055	3.3945	1.00	4.76

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Overall cognitive strategies	Low	40	3.8000	.55386	.08757	3.6229	3.9771	1.38	4.37
	Intermediate	50	3.5700	.70764	.10008	3.3689	3.7711	2.35	4.76
	High	30	3.2000	.59348	.10835	2.9784	3.4216	13.2	4.36
	Total	120	3.5542	.66679	.06087	3.4336	3.6747	1.32	4.76
Comprehending strategies	Low	40	3.8408	.45444	.07185	3.6954	3.9861	2.37	4.96
	Intermediate	50	3.5600	.73488	.10393	3.3512	3.7688	2.00	4.89
	High	30	3.3667	.62506	.11412	3.1333	3.6001	1.75	4.63
	Total	120	3.6053	.64739	.05910	3.4882	3.7223	1.75	4.96
Memory strategies	Low	40	3.5000	.76183	.12046	3.2564	3.7436	2.24	5.00
	Intermediate	50	3.1900	.67110	.09491	2.9993	3.3807	1.92	4.67
	High	30	2.8333	.53225	.09718	2.6346	3.0321	1.82	4.58
	Total	120	3.2042	.71335	.06512	3.0752	3.3331	1.82	5.00
Retrieval strategies	Low	40	3.7500	.59717	.09442	3.5590	3.9410	2.45	4.98
	Intermediate	50	3.4800	.90999	.12869	3.2214	3.7386	1.85	4.93
	High	30	3.0000	1.05641	.19287	2.6055	3.3945	1.00	4.76
	Total	120	3.4500	.90083	.08223	3.2872	3.6128	1.00	4.98

As shown in Table 4.5, overall cognitive strategies were used more frequently by the low proficiency test takers (M=3.8000) and less frequently by the Intermediate (M=3.5700) and high proficiency test takers (M=3.2000).

As for the three subcategories of cognitive strategies, the mean score of using comprehending strategies was the highest (M=3.6053), whereas the mean score of using memory strategies was the lowest (M=3.2042) for the total participants. The low proficiency group got the highest mean scores in using overall strategies (3.8000), comprehending strategies (M=3.8408), memory strategies (M=3.5000), and retrieval strategies (M=3.7500). In comparison, the high proficiency group got the lowest mean scores in using overall strategies (M=3.2000), comprehending strategies (M=3.3667), memory strategies (M=2.8333), and retrieval strategies (M=3.000). To probe the significant differences among the mean scores of the three groups of reading proficiency in using cognitive strategies, a one-way analysis of variance was run.

Table 4.5 *One-way ANOVA for Using Cognitive Strategies*

		Sum of Squares	df	Mean Square	F	Sig.
Overall cognitive strategies	Between Groups	6.193	2	3.096	7.755	.001
	Within Groups	46.715	117	.399		
	Total	52.908	119			
Comprehending strategies	Between Groups	4.028	2	2.014	5.140	.007
	Within Groups	45.847	117	.392		
	Total	49.875	119			
Memory strategies	Between Groups	7.636	2	3.818	8.442	.000
	Within Groups	52.919	117	.452		
	Total	60.555	119			
Retrieval strategies	Between Groups	9.720	2	4.860	6.547	.002
	Within Groups	86.848	117	.742		
	Total	96.568	119			

As presented in Table 4.5, significant differences were found among the mean scores of the three proficiency groups in using overall cognitive strategies $F_{(2,117)}=7.755$, P= .001 ; comprehending strategies $F_{(2,117)}=5.140$, P= .007 ; memory strategies $F_{(2,117)}=8.442$, P= .000 ; and retrieval strategies $F_{(2,117)}=6.547$, P= .002 .

To compare the mean differences in pairs, a Tukey HSD test was run. The results are presented in Table 4.6.

Table 4.6 *Multiple Comparisons between the mean scores of the three proficiency groups*

Dependent variable	(I) Reading level	(J) Reading level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Overall cognitive strategies	Low	Intermediate	.23000	.13404	.204	-.0882	.5482
		High	.60000*	.15261	.000	.2377	.9623
	Intermediate	Low	-.23000	.13404	.204	-.5482	.0882
		High	.37000*	.14593	.033	.0236	.7164
	High	Low	-.60000*	.15261	.000	-.9623	-.2377
		Intermediate	-.37000*	.14593	.033	-.7164	-.0236
Comprehending strategies	Low	Intermediate	.28075	.13279	.091	-.0345	.5960
		High	.47408*	.15119	.006	.1152	.8330
	Intermediate	Low	-.28075	.13279	.091	-.5960	.0345
		High	.19333	.14456	.377	-.1498	.5365
	High	Low	-.47408*	.15119	.006	-.8330	-.1152
		Intermediate	-.19333	.14456	.377	-.5365	.1498
Memory strategies	Low	Intermediate	.31000	.14267	.080	-.0287	.6487
		High	.66667*	.16243	.000	.2811	1.0523
	Intermediate	Low	-.31000	.14267	.080	-.6487	.0287
		High	.35667	.15531	.060	-.0120	.7254
	High	Low	-.66667*	.16243	.000	-1.0523	-.2811
		Intermediate	-.35667	.15531	.060	-.7254	.0120
Retrieval strategies	Low	Intermediate	.27000	.18276	.306	-.1639	.7039
		High	.75000*	.20809	.001	.2560	1.2440
	Intermediate	Low	-.27000	.18276	.306	-.7039	.1639
		High	.48000*	.19897	.045	.0077	.9523
	High	Low	-.75000*	.20809	.001	-1.2440	-.2560
		Intermediate	-.48000*	.19897	.045	-.9523	-.0077

*. The mean difference is significant at the 0.05 level.

As presented in table 4.7, significant differences were found between the low and high proficiency groups in the use of cognitive strategies (I-J=.60000*, P= .000); comprehending strategies (I-J=.47408*, P= .006); memory strategies (I-J=.66667*, p= .000); and retrieval strategies (I-J=.75000*, p= .001).

4.7 Pearson Correlation between the Participants' Test Scores and their Strategy Use

		Reading Test Score	Cognitive strategies	Metacognitive strategies
Reading Test Score	Pearson Correlation	1	-.692**	.712**
	Sig. (2-tailed)		.000	.000
	N	120	120	120
Cognitive strategies	Pearson Correlation	-.692**	1	-.421**
	Sig. (2-tailed)	.000		.001
	N	120	120	120
Metacognitive strategies	Pearson Correlation	.712**	-.421**	1
	Sig. (2-tailed)	.000	.001	
	N	120	120	120

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

In order to examine the relationship between metacognitive and cognitive strategies, a Pearson product-moment was run. Table 4.7 presents the results of the correlation. In this table, it can be seen

that there was a negative correlation between the test-takers' use of metacognitive strategies and their cognitive strategies (r=-.421, N=120, P<0.01). In order to examine the relationship between metacognitive and reading test performance, a Pearson product-moment was run. Table 4.7 presents the results of the correlation. In this table, it can be seen that there was a strong positive correlation between the test-takers' use of metacognitive strategies and their reading test performance (r= .712, N=120, P<0.01). In order to examine the relationship between cognitive and reading test performance, a Pearson product-moment was run. Table 4.7 presents the results of the correlation. In this table, it can be seen that there was a negative correlation between the test-takers' use of cognitive strategies and their reading test performance (r=-.692, N=120, P<0.01).

5. Discussion and conclusion
In this part the results reported above will be discussed and clarified with regard to the research questions: 1. Does level of reading proficiency affect the use of metacognitive and cognitive strategies in reading comprehension test performance? To put to test the above-stated question, the data presented in Tables 4.1 and 4.3, comparing the results of the One-way ANOVA test all indicate that the level of reading proficiency affect the use of metacognitive and cognitive strategies in reading comprehension test performance. As a result, the first null hypothesis was rejected. Furthermore, the findings of this study show that they are in contrast to those of Oxford and Ehrman's (1995) which indicated that there is no positive relationship between strategy use and language proficiency using the SILL as strategy instrument and self-rating as proficiency measurement. However, the findings of the current study can be found in agreement with Underwood (1997) and Rosental (2000) who proved a positive correlation between metacognitive strategies, and language proficiency.

Regarding the second question 2 ''Is there any relationship between metacognitive and cognitive strategies among Iranian EFL readers? '', this study showed that there is a negative correlation between Iranian test-takers' use of metaconitive and cognitive strategies. (r=-.421, N=120, P<0.01). Thus the second null hypothesis was rejected. The findings of the present study are in line with Song (2004) who investigated the extent to which metacognitive and cognitive strategies use accounted for Chinese EFL test-takers' performance in the College English Test Band. He has also reported that metacognitive and cognitive strategies are correlated with Chinese test-takers L2 performance. In line with the present findings, a number of other researchers have confirmed that cognitive and metacognitive strategy use could explain the variation in language test

performance (e.g., O'Malley & Chamot, 1990; Oxford, 1990; Wenden, 1991; Anderson, 2005).

Regarding the third question 3 ''Is there any relationship between using metacognitive strategies and reading comprehension scores of Iranian EFL readers? This study showed that there is a direct and strong relationship between metacognitive strategies and reading comprehension scores. This study showed that metacognitive strategies played a very important role in students' reading comprehension (r=.712, N=120, P < 0.01). The more the students used metacognitive strategies, the more likely they were to obtain higher scores on the reading comprehension test. Thus, the third hypothesis was confirmed. Consequently, the findings of the present study are found to be in line with Yin and Agens (2001) proposed that good readers employ more metacognitive strategies since they are more conscious of them. Moreover, the findings are the same as those found by Phakiti's (2003) who also suggested that successful test-takers' employ metacognitive strategies more frequently than cognitive strategies. Similarly, Vandergrift (1999) suggested that successful learners are better at employing metacognitive strategies.

Regarding the fourth question 4 ''is there any relationship between using cognitive strategies and reading comprehension scores of Iranian EFL readers?'', this study showed that there is a negative relationship between cognitive strategies and reading comprehension scores. (r=-.692, N=120, P < 0.01). It means that the students who used more cognitive strategies tended to score fewer on the reading comprehension test, whereas the students who used fewer cognitive strategies were likely to get high scores on reading comprehension test. The findings of the present study are in line with Zare-ee (2007) examined the relationship between the use of cognitive and metacognitive strategies and EFL reading achievement. MANOVA results showed that students at higher levels of reading ability use metacognitive strategies more often than the less successful readers. The finding of this study manifested an interaction between participants' reading ability and use of strategic competence components (metacognitive and cognitive test-taking strategies) in reading comprehension of Iranian students majoring in different fields of study.

The findings empirical evidences for the conceptual frameworks of language use offered by Bachman and Palmer (1996, 2010) as well as the theoretical framework of language use offered by Bachman (1990) due to the significant positive interaction found between the participants' reading ability and use of metacognitive and cognitive strategies as the components of strategic competence. In general, the

findings revealed that language competence and strategic competence act as the two major components of language ability, the combination of which provides language learners with the ability to comprehend reading comprehension texts and answer reading questions. The findings also confirmed the viewpoints of the scholars who believed that readers with stronger metacognitive awareness are able to interpret a reading task more effectively through selecting metacognitive strategies based on the context requirements (e.g., Paris, Lipson, & Wixson, 1994; Pressley & Afflerbach, 1995; Cohen, 1998; Hudson, 2007; Zhang, 2008).

The findings can help language teachers and test designers gain a better understanding of linguistic and strategic aspects of test-taking process and improve the design and validity of the tests. The findings can help language teachers interpret test scores with great care to make a sound judgment about the actual language ability of language learners with regard to the factors affecting test performance, particularly metacognitive awareness. The systematic investigation into the strategic patterns of L2 learners at different levels of reading ability can reveal the strategic gap between more proficient and less proficient language learners recommending language teachers to tailor appropriate instructional programs to meet the learners' needs. Thus, language teachers should take teacher-researcher role to improve reading ability of L2 learners through designing the best instructional programs and the appropriate remedial ways to fill the gap between more proficient and less and the appropriate remedial ways to fill the gap between more proficient and less proficient learners. Language teachers can design remedial courses and supplementary materials to improve the reading ability of less proficient learners.

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