

Cognitive Strategy Use and Gender in L2 Reading Comprehension: A Case of Iranian Pre-University Students

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Abstract

This study aimed to find out the effect of cognitive reading strategies on male and female students' reading comprehension ability. 120 homogeneous pre-university male and female students (60 males and 60 females) were selected from a total population of 170 at the pre-intermediate level. Then, they were randomly assigned to control and experimental groups. The experimental groups (A and B) received instructions regarding cognitive learning strategies (summarizing, elaborating, and re-reading) respectively, whereas the control groups (C and D) received Conventional Instruction (CI) method followed an individualistic instructional approach based on the exercises in their regular text books. A t-test and one-way ANOVA were conducted to compare the groups' means and to determine the effect of gender. The results depicted that summarizing, elaborating, and re-reading strategies had a significant effect on improving Iranian EFL students' reading comprehension with regard to gender.

Key words: cognitive reading strategies, male, female, reading comprehension

INTRODUCTION

English has gained importance all over the globe due to political, economical, and technological reasons. It is generally believed that English as a Foreign Language (EFL) plays a crucial role in Iranian educational system in which reading comprehension has its own dominance among other teaching skills. Reading comprehension is a very complex process, the importance of which has been mentioned in many of the studies (Jafari & Shokrpour, 2012).

Reading comprehension is a complex process in itself, but it also depends upon other important lower-level processes. It is a critical foundation for later academic learning, many employment skills, and life satisfaction. It is an important skill to target, but we should not forget about the skills on which it depends. To improve the reading

comprehension skills of poor performers, we need to understand that there is no “magic wand”, and no secret weapon that will quickly improve reading competencies for all poor readers. Careful assessment is required to determine individual children’s strengths and weaknesses, and programs need to be tailored accordingly; most poor readers will need continued support in many areas. The roots of most reading comprehension problems lie in the early elementary years (Kirby 2007).

The use of learning strategies is an important factor in the success of EFL learners. The importance of learning strategies to reading comprehension needs to be taken into serious consideration. The role of cognitive strategies in reading comprehension needs to be clarified until students become independent in reading for meaning. It was revealed that the students' sex, school year, and proficiency had a significant relationship on their use of learning strategies. With regard to this, the main research questions in this study are as follows:

1. To what extent do elaborating, summarizing, and re-reading strategies affect students' L2 reading comprehension?
2. To what extent does gender affect strategy use in L2 reading comprehension?

LITERATURE REVIEW

Reading comprehension has always been of paramount importance in Iranian educational system, and comprehension of both general and academic texts has been the aim of many educational centers for years. This precisely can be due to the fact that there have been many people wishing to understand what the texts of both academic and non-academic wants to say in the target language so that they can follow their aims regarding their profession and/or any other motivation they have. Therefore, in many language centers and institutes much attempt has to be made by teachers to teach students the appropriate strategies for understanding the texts of the target language they learn (Mehrpour, Sadighi & Bagheri, 2012).

According to Hong (2007), cognitively, reading comprehension defined as construction of meaning from a printed or a written message is a two-way process between the reader and the author. And a lot of processes interact with text features and these are interactive as far as they are widely accepted models of fluent reading.

In the study conducted by McKown and Barnett (2007) on reading comprehension of second grade and third grade students, the results showed that the teacher researchers intended to improve reading comprehension by using higher-order thinking skills such as predicting, making connections, visualizing, inferencing, questioning, and summarizing. In their classrooms, the teacher researchers modeled these strategies through the think-aloud process and graphic organizers. Students using these strategies through the whole class, small group, and independent practice followed this. The teacher researchers gathered information prior to implementing the reading strategy

interventions. The meta-comprehension strategy index indicated a lack of student knowledge of strategies to use before, during, and after reading. The state snapshot of early literacy given to the second grade students identified nine of the sixteen students below target level and others were at risk for reading comprehension failure (Samadi & Maghsoudi, 2013).

The information gathered by the researchers after the interventions had been modeled and practiced showed improvement with the second and third grade students. The post-intervention scores for the meta-comprehension strategy index showed a significant increase in students' knowledge of the reading comprehension strategies.

The research conducted by Ok (2008) focused on the use of language learning strategies of 325 Korean secondary school students of English as a foreign language. There were 163 boys and 162 girls with a consideration of variables such as sex, school year, and proficiency in grammar, specifically the use of prepositions. The subjects were attending boys' or a girls' middle school in Pusan, Korea. Strategy use was assessed through a Korean translation of the Strategy Inventory for Language Learning (SILL) developed by Oxford 1990, and proficiency was determined by a cloze test. The major findings were that the reported frequency of strategy use by the students was moderate overall, with the students reporting most frequent use of compensation strategies and least of affective strategies. Girls showed more frequent use of all six-strategy categories than boys, and third school year students employed compensation and memory strategies more often, whereas first school year students employed meta-cognitive, cognitive, affective and social strategies more often. Cognitive strategies showed the highest correlation with meta-cognitive and memory strategies. Those students who scored highly on the cloze test reported using strategies more often than the low proficiency group.

METHOD

Participants

120 pre-intermediate Iranian EFL students (i.e., 60 males and 60 females) who were studying English for General Purposes (EGP) participated in this investigation. They were ranging in age from 17 to 37 years old and majoring in engineering courses at Abadan Azad University, Iran. They were selected based on non-random convenience sampling method.

Instruments

Several different testing instruments were utilized in the process of the development of the present research. They are described as follows:

Questionnaire

A questionnaire enlisted 9 various topics of reading passages and asked the respondents (male and female respondents) to choose their most favorable topics respectively and rank them from the most favorable one to the least. Respondents were also asked to give their major, gender, and age. By analyzing the questionnaires filled by respondents, neutral topics for selecting the contents of reading passages in constructing M-C reading comprehension were found.

Nelson proficiency test

Thirty items of Nelson proficiency test (Fowler & Coe, 1976) was applied to determine the homogeneity of the groups regarding their levels of proficiency as pre-intermediate level. The reliability of this homogeneity test was computed through the application of Kuder and Richardson (KR-21) method as ($r = .75$). The rationale behind adopting this test for the purpose of the study was that it is one of the available standardized tests compatible with Iranian high school students.

Standardized reading comprehension test

The second type of test regarding three cognitive strategies (summarizing, elaboration, and re-reading) was utilized in the process of the research was a standardized reading comprehension test (30 multiple-choice items for two passages). According to Pearson-Product Movement Correlation Coefficient, there should be a significant correlation between the teacher-made test (reading comprehension test) and the Nelson test ($r = .71$). According to KR-21 formula, the reliability of the post-test was estimated ($r = .73$).

Procedure

After selecting reading passages (neutral reading passages), the participants were put to a sample test. After the scores of the test were obtained, the average mean of the scores was calculated, and those participants whose scores were around the mean were selected. Then the students whose scores were more homogeneous were selected for the next phase of the study. Used this way, students were randomly divided into two male and female experimental groups (A and B) and two male and female control groups (C and D). In each group, only 30 students who were at pre-intermediate level were under consideration. Throughout the class time, the researcher provided experimental groups with a text on reading comprehension at different intervals and the students were put to training on reading the text, by applying cognitive strategies of elaboration, summarizing, and re-reading strategies simultaneously. Sixteen sessions took place in the students' classroom and each was about 45-minutes reading period. The treatment lasted for two months and covered two instructional units from the pre-university English book. Two quizzes were given to the participants in the third and seventh sessions to receive the appropriate feedback of treatment effects.

The control groups will receive conventional training of reading comprehension based on presentation, practice, and production (PPP) strategy as a popular reading comprehension procedure in EFL classrooms (Celce-Murica, 2001). On the other hand, they are asked to respond the exercises after they have read the text. During the treatment two quizzes were given to students.

Data analysis

At the end, the post-tests were administered to the four groups to compare any significant differences between those of the experimental groups and the control groups. Data will be analyzed through *t*-test to clarify the mean differences and the treatment effect.

RESULTS

To begin with, questionnaire analysis indicated that the most popular and neutral topics for male and female respondents were the effects of exercise, giving a speech and losing your weight. Consequently, the passages mentioned above were selected for M-C reading comprehension test as a post-test.

To accept or reject the stated null hypothesis, the data obtained through Nelson language test as homogeneity test and post-test were analyzed through using SPSS 17 software in different steps. The early step used in analyzing data was determining the homogeneity of the groups regarding their levels of second language proficiency. So, the students' overall scores on Nelson language proficiency test were collected from their records. Means and standard deviations of each of the four groups for Nelson language proficiency test are presented in Table 1. It shows that each of the four groups had approximately similar performance on Nelson language proficiency test, and the obtained means and standard deviations of each of the four groups, were to some extent, similar.

Table 1. Sample means and standard deviations for homogeneity test

Group	N	Maxi	Mini	Mean	Std. Deviation
Experimental Group (A)	30	16	5	10.67	3.20
Experimental Group (B)	30	18	6	10.90	3.32
Control Group (C)	30	16	3	9.80	3.60
Control Group (D)	30	18	6	10.83	3.02
Total	120	18	3	10.55	3.28

To test the research hypotheses, the researcher dealt with comparing language learning strategies regarding, a parametric technique for analyzing the quantitative data. In this study, the independent variable was language-learning strategies (cognitive strategies) with three variables including elaboration, summarizing, and re-reading strategies. In

this way, the study investigated the role of the three independent variables through *t*-test, in order to find out, whether these strategies influence students' means of reading comprehension (i.e. dependent variable) of female and male (i.e. moderate variable) Iranian EFL pre-university students at the pre-intermediate level of English reading proficiency or not.

To do so, the descriptive statistic compared the means of two experimental groups and two control groups with each other and also presented means and standard deviations of the four groups in pairs for reading comprehension achievement. In this case, $P\text{-value} = 0 < 0.05$, so the hypothesis of mean equality of two groups (A, B and C, D) was rejected, and also the mean of experimental groups ($M=19.13$) is greater than the mean of control groups ($M=14.07$). Based on these results, these strategies improved students' reading comprehension and the first null-hypothesis was rejected. The results are shown in Tables 2 and 3 as follows:

Table 2. Performance in reading comprehension

Groups	N	Mean	Std. Deviation	Std. Error Mean
Experimental	60	19.13	4.859	.627
Control	60	14.07	5.710	.737

Table 3. Summary of Independent Sample *t*-test

Variances	t-test for Equality of Means						
	<i>t</i>	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence interval of the Difference	
						Lower	Upper
Equal variances assumed	5.234	118	.000	5.067	.968	3.150	6.983
Equal Variances not assumed	5.234	115.053	.000	5.067	.968	3.149	6.984

A *t*-test was run on the mean score of two groups (A and C) received summarizing, elaboration, and re-reading strategies in reading comprehension post-test and it yielded statistically significant difference among them. The results of *t*-test for the effect of these three strategies in reading comprehension as independent variables were statistically indicated mean differences.

To evaluate the effects of summarizing, elaboration, and re-reading strategies on reading comprehension, the sample means of four groups (in pairs, male experimental and control groups and female experimental and control groups) were compared. The results of *t*-test showed a significant difference between experimental groups (A & B) and control groups (C & D) on the dependent variable of reading comprehension. According to F-distribution table (3.11) at the significance level $p < .05$ level of probability was needed for the intersection of 2/87 (Hatch & Farhady, 1999). The ratio was much greater; therefore, it is true to say that, the differences between two groups were statically significant. The hypothesis of equality of mean of two groups (A & C) was rejected, because the ($p < .006$). At last, it is concluded that the mentioned strategies had an effect on male experimental and control groups' performance in reading comprehension, because the mean of experimental group is higher than the mean of control group. In addition, the hypothesis of equality of mean of two groups (B & D) was rejected, because the ($p < .05$), and the mean of experimental group (B) is higher than the mean of control group (D). Consequently, these strategies had an effect on female experimental and control groups' performance in reading comprehension. Tables 4 to 7 indicate the results of *t*-test.

Table 4. Group statistics of performance in reading comprehension

Groups(Males)	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	17.43	4.651	.849
Control	30	13.87	5.050	.922

Table 5. T-test for male groups' performance in reading comprehension

Variances	t-test for Equality of Means						
	<i>t</i>	df	Sig.	Mean Difference	Std. Error Difference	95%Confidence interval of the Difference	
						Lower	Upper
Equal variances assumed	2.846	58	.006	3.567	1.253	1.058	6.076
Equal Variances not assumed	2.846	57.612	.006	3.567	1.253	1.057	6.076

Table 6. Group statistics of performance in reading comprehension

Group(Females)	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	20.83	4.519	.825
Control	30	14.27	6.384	1.166

Table 7. T-test for female groups' performance on reading comprehension

Variances	t-test for Equality of Means						
	<i>t</i>	df	Sig.	Mean Difference	Std. Error Difference	95%Confidence interval of the Difference	
						Lower	Upper
Equal variances assumed	4.599	58	.000	6.567	1.428	3.708	9.425
Equal Variances not assumed	4.599	52.229	.000	6.567	1.428	3.702	9.432

A *t*-test was carried out to compare two experimental groups' mean scores of strategy use. Based on these results, the hypothesis of mean equality was rejected, because the significant level was set at ($p < .006$) rather than ($p < .05$). In addition, the mean score was higher for female experimental group than male experimental group's mean score. Therefore, females use language-learning strategies more than males and the second null hypothesis was rejected. Table 7 and 8 succinctly show differences in the performance of male and female participants in using these language-learning strategies in the achievement of reading comprehension.

Table 8. Group statistics of performance in reading comprehension

Group (Gender)	N	Mean	Std. Deviation	Std. Error Mean
Males	30	20.83	4.519	.825
Females	30	17.43	4.651	.849

Table 9. T-test strategy uses by gender

Variances	t-test for Equality of Means						
	<i>t</i>	df	Sig.	Mean Difference	Std. Error Difference	95%Confidence interval of the Difference	

						Lower	Upper
Equal variances assumed	2.872	58	.006	3.400	1.184	1.030	5.770
Equal Variances not assumed	2.872	57.952	.006	3.400	1.184	1.030	5.770

DISCUSSION AND CONCLUSION

In general, the results of t-tests indicated statistically significant difference between the experimental groups (A & B) and control groups (C & D) on dependent variable of reading comprehension achievement post-test. It indicated that the above-mentioned strategies are effective in improving EFL reading comprehension achievement of pre-university students at the pre-intermediate level of English.

In more details, the present study showed that in comparison to the performance of females and males in control groups, the performance of females and males in experimental groups were different. These differences were much significant compared to that of control groups. There was a significant difference between experimental groups (male and female) and control groups (male and female) in using summarizing, elaboration, and re-reading strategies ($p < .05$). Moreover, the mean of experimental groups was higher than control groups based on the post-test scores. In other words, the performance of experimental groups in using cognitive strategies (summarizing, elaboration, and re-reading) showed better results than that of control groups.

Additionally, the theoretical relevance of language learning strategies in enhancing students reading ability is based on the assumption that students who employ language learning strategies, can take a more reflective and self-directed approach to text reading. Furthermore, using strategies can assist learners in reducing anxiety that debilitates comprehension in reading text. This is consistent with the findings of Ok (2008) who claims that successful learners are good strategy users and they are defined as knowing a lot of strategies and transferring them readily and appropriately to new setting and Hong 2007 who state that students with higher records of academic achievement have been found to use more language learning strategies and monitor their learning process more flexibly than less successful learners. Appropriate language learning strategies result in improved proficiency and greater self-confidence; consequently, these reading strategies result in enhancing reading comprehension.

The results of t-tests (Tables 8 and 9) yielded significant interaction between independent variables the readers' gender and the strategy use as they affect dependent variable, i.e. multiple-choice reading comprehension test performance. In the third t-test, the interaction effect was more tangible than the second t-test procedure where indicated that cognitive reading strategies (summarizing, elaboration, and re-reading)

did affect learners' reading comprehension test performance. Anyway, the results of the third T-test procedure (Tables 8 and 9) accounted for the significant interaction effect of the readers' gender and strategy use on the performance of sample EFL students (30 males and 30 females) in reading comprehension test administration ($p < .05$).

In conclusion, the studies mentioned above revealed the fact that instruction of cognitive reading strategy of summarizing, elaboration, and re-reading for pre-intermediate language learners among males and females was pedagogically effective and precipitate strategy use. If strategy training to enhance the reading comprehension skill is felt advantageous, it should be limited to notifying pre-intermediate language learners of cognitive reading strategy of summarizing, elaboration, and re-reading which they have to apply to make them better understand the reading passages. However, the role of other cognitive strategies in promoting reading comprehension should be ignored.

Material designers are advised to acquaint pre-intermediate language learners with the substance and advantages of cognitive reading strategies of elaboration, summarizing, re-reading not necessarily incorporating this strategy into language textbooks so that language learners with pre-intermediate language ability may draw upon it.

Many language teachers in EFL contexts treat the reading comprehension skill in a traditional way. They are considerably remiss in teaching this skill, overlooking the insight that they can give language learners by using language reading strategies in general and cognitive strategies in particular. It is the responsibility of methodologists and applied linguists to help them fathom out the value of reading strategies based on instruction.

The value of cognitive strategies use of elaboration, summarizing, re-reading should be discussed by teachers who teach at the pre-intermediate level. Therefore, the use of cognitive strategies of elaboration, summarizing, re-reading should be more brought to notice among students of reading classes in particular based on what results of the study suggested. The following are some suggestions and insights regarding cognitive strategies and the reading comprehension for future researches. Researchers are highly counseled to consider them before carry out any research. They are: (1) there are other important variables like subjects' proficiency level, major, motivation, psychological type, sensory preferences, attitude and so on not yet investigated among Iranian EFL learners which can serve as interesting areas for future research; (2) in this study only pre-university students participated who were young adults. This study can be replicated allowing children and adults (learning English at private English institutes and university) and guidance/high school-level students to take part and to check what the findings will be; and (3) future researches may be required to engage the language methodologies and language testing as the other pedagogical factors in the instruction and use of cognitive reading strategies and their influence on the promotion of reading comprehension.

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