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Does reading strategy use predict and correlate with reading achievement of EFL learners?

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Abstract

This study aimed to investigate whether any statistically significant relationship existed between Iranian EFL learners' reading strategy use and their reading achievement performed in their reading comprehension test (RCT) scores. Moreover, current study tried to examine whether the participants' overall reading strategy, and also their use of any of reading strategy subscales, were a predictor of their RCT scores. To this end, two instruments of Survey of Reading Strategy (Mokhtari & Sheorey, 2002), and an RCT were employed to collect the data. The results revealed a statistically significant and positive relationship between participants' overall and also Global and Problem Solving reading strategy use and their RCT scores; however, no statistically significant relationship was found between participants' Support reading strategy use and their RCT scores. On regression part, overall reading strategy use was found to be a predictor of RCT scores; however, it was of low predictive power, and among reading strategy subscales, only Global reading strategy use could be a predictor of RCT scores. Finally, pedagogical implications were presented for learners, teachers and materials developers in the field of EFL teaching/learning.

Keywords: reading strategy; meta-cognition; reading achievement; prediction; EFL learners

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1. Introduction

Training good language learners is the concern of teachers and researchers in the field of ELT, and areas which explore ways to train good language learners, value to be investigated. Among English language skills, reading is the most emphasized skill in traditional English Language classroom (Susser & Robb, 1990), and Anderson (2003) considers reading as "an essential skill which is the most important skill to master for most of the learners of English in order to ensure success in learning" (p. 2). Reading develops gradually as the reader does not become fluent suddenly or immediately following a reading course. This picture of reading suggests that reading is very complex, and it takes considerable time and resources to develop, and that it cannot be taught simply in a short time or limited courses. Moreover, Hammadou (2000) conceives reading comprehension as "a complex construct, over which researchers have struggled to understand the process by which people come to comprehend what they read, and educators have labored long and hard to help novice readers to become more proficient" (p.1). The role of reading skill is found vital regarding the considerable size of input (in the form of reading texts) to which English as a foreign language (EFL) learners are exposed to throughout all steps of their language learning process. Considering the vital function of reading in English language learning progress, factors influencing the enhancement or deterioration of this skill demand more investigations. Reading strategies as "mental processes that readers consciously choose to use in accomplishing reading tasks" (Cohen, 1990, p. 83), are believed to improve reading comprehension. Many studies in past decades aimed to formulate the detailed influence of reading strategy use on reading comprehension of EFL learners (Anderson, 1991; Block, 1992; Macaro, 2003; Paris, Wasik, & Turner, 1991; Pressley & Harris, 2006; Sinatra, Brown, & Reynolds, 2002). Exploring the possible relationships between EFL learners' use of reading strategies and their reading achievement is regarded vital, as improvement in reading skill functions as an accelerative factor in language learning process.

2. Review of the related literature

In past decade, several studies have investigated the role of meta-cognitive awareness in reading comprehension and as Sheorey and Mokhtari (2001) state, the consensus is that strategic awareness and monitoring of the comprehension process, known as meta-cognition, are crucial dimensions of the qualified reading. To measure meta-cognitive awareness of reading strategies, Mokhtari and Richard (2002) developed a questionnaire which was called Meta-cognitive Awareness of Reading Strategies Inventory (MARSI). It was designed to measure meta-cognitive awareness of reading strategies of students who were native-speakers of English. Later, Mokhtari and Sheorey (2002) designed a questionnaire that could measure meta-cognitive awareness of reading strategies of adolescent and adult students who had English as their second or foreign language. This questionnaire was called Survey of Reading Strategy (SORS). Investigating successful and unsuccessful readers' use of meta-cognitive reading strategies, Uzuncakmak (2005) found that Successful readers had reported using a larger number of strategies.

On the other hand, results of a study by Soi Meng (2006) who employed think-aloud methods to explore the patterns of reading strategy use of good and weak advanced EFL readers consisting of eight good readers and eight weak ones, revealed that weak readers used meta-cognitive strategies more frequently. Also finding of this study showed that good and weak readers know and used the same strategies, and employed bottom-up strategies similarly. The major difference was the greater use of top-down strategies by good readers, indicating that good readers had a higher tendency to achieve the overall meaning of the text. Hosseini Nezhad (2006) who explored the role of meta-cognitive awareness of reading strategies in the reading comprehension of Iranian undergraduate

students from Birjand national university (located in Iran), found that an indisputable relationship existed between meta-cognitive awareness of reading strategies of the participants and their performance in reading test.

Sheorey and Baboczky (2008) investigated the strategy use of 545 Hungarian college students (134 male and 411 female), through SORS along with students' self-rate of their reading abilities in English on a scale from one to six. The results indicated that those who rated themselves as strong readers had a higher mean on the global strategies subscale. They also found that females scored higher than males on about half of the SORS items, and on all three SORS subscales. Zhang and Wu (2009) assessed meta-cognitive awareness and reading-strategy use of 270 Chinese EFL students at a senior high school in Hainan province of China, applying SORS. The results showed that the students reported using the three categories of strategies, namely global, support, and problem solving, at a high-frequency level. The high-proficiency group outperformed the intermediate proficiency group and the low-proficiency group in 2 categories of reading strategies: global and problem solving; but no statistically significant difference was found among the 3 proficiency groups in using support strategies.

Yoku (2009) accomplished a mixed method research, exploring the use and role of meta-cognitive awareness in academic reading among adult English as Second Language (ESL) students of various academic levels enrolled in a university in the southeastern part of the United States of America, through administering SORS and a background information questionnaire. To this end, 98 students participated in the quantitative part of the study and semi-structured interviews were conducted; including examinations of students' academic reading materials, with six students (two English Language Institute [ELI], two undergraduate, and two graduates).

The quantitative results indicated that the ELI students reported the most frequent use of meta-cognitive reading strategies, compared to the undergraduate and graduate students as measured by the SORS, and no positive correlations were found between the students' academic performance measured by grade point averages (GPAs) and their scores of overall and subscales on the SORS, also no relationships were detected between the students' self-rated English reading proficiency and their scores on the overall and subscales on the SORS. The qualitative results suggested that participating students at different academic levels were aware of meta-cognitive reading strategies while involved in academic reading. Adjusting reading speed and selecting strategies for different purposes, using prior knowledge, inferring text, marking text, focusing on typographical features, and summarizing were the key reading strategies which were used.

Malcolm (2009) investigated the academic reading strategy use of 160 medical university students in Bahrain, by means of SORS. Findings showed that all students reported high use of strategies overall, but significant differences were found in reported use of meta-cognitive strategies in general and specific strategies related to translating from English to Arabic. Students of fourth year translated less and used more meta-cognitive strategies, while Students whose initial English proficiency was low and those in their first year, reported translating more. Poole (2009) discovered whether females and males significantly varied in their utilization of reading strategies. The participants of his study were 352 (male=117, female=235), low to intermediate Colombian university students who completed SORS. The results indicated that males' overall strategy use was moderate, while females' overall strategy use was high. In addition, females' overall strategy use was significantly higher than males', as was their strategy use on two of the three SORS subscales (support and problem solving strategies).

Park (2010) explored reading strategy use of 115 Korean college students learning English as a foreign when they read authentic expository/technical texts in English. Participants, consisted of 60 males and 55 males, were from three different universities in Korea. The study was conducted using SORS and modified SORS to measure the students' general reading strategy use and text-specific reading strategy use respectively, a reading comprehension section of a TOFEL in order to measure the students' reading comprehension ability, one authentic expository/technical reading passage and one authentic narrative reading passage for the students'

reading tasks, and a questionnaire of background information. The results revealed that the Korean EFL college students reported using reading strategies with high frequency when they read authentic expository/technical texts in English, and their reading comprehension ability was related to their reading strategy use to some degree; the higher their reading comprehension ability, the more they used sophisticated reading strategies. Findings of most of the studies revealed that high achievement in reading comprehension correlated with high use of reading strategies (Hosseini Nezhad, 2006; Malcolm, 2009; Park, 2010; Uzuncakmak, 2005; Zhang & Wu, 2009); however, they contradict results of Soi Meng (2006), and Yoku (2009).

3. Current study

Regarding the fundamental role of reading skill in EFL learning enhancement and considering that most of the studies which examined the relationship between reading strategy use and reading achievement were carried out in settings different from Iran, a research was desired to focus on the associations between Iranian EFL learners' reading strategy use and their reading achievement. This study aims to investigate whether there is any statistically significant relationship between Iranian EFL learners' overall reading strategy use and their reading achievement performed in their reading comprehension test (RCT) scores. To shed more light on nuances of the issue, reading strategies are dissected to Global, Support, and Problem Solving strategies, and any statistically significant relationship between Iranian EFL learners' Global, Support, and Problem Solving reading strategy use and their reading achievement performed in their RCT scores are investigated. Moreover, current study tries to examine whether the participants' overall use of reading strategy is a predictor of their RCT scores. Also the study examines whether the participants' use of each of reading strategy subscales, namely Global, Support, and Problem Solving is a predictor of their RCT scores. To do so, three research questions (RQs) are presented:

RQ1: Is there any statistically significant relationship between Iranian EFL learners' overall, Global, Support, Problem Solving reading strategy use and their RCT scores?

RQ2: Is Iranian EFL learners' overall reading strategy use a predictor of their RCT scores?

RQ3: Is Iranian EFL learners' use of any of reading strategy subscales, namely Global, Support, and Problem Solving a predictor of their RCT scores?

3.1 Participants

Participants of the present study were 114 EFL learners of Iran Language Institute (ILI). The sample consisted of 60 female participants (52.6%), from Shahid Beheshtee girls-only branch and 54 male participants (47.4%), from Tajrish and Jam boys-only branches who were all in Intermediate level (attending term Inter 1) at the time of the research. Therefore, the participants formed a homogenous sample, regarding their English language proficiency. Participants of the current study were high school students, university students, or graduates, with degrees of BA/BS/MA/MS/MD in various disciplines.

3.2 Instrumentation

Two instruments were used in this study 1) a reading comprehension test (RCT), and 2) Survey of Reading Strategy (SORS).

3.2.1 *Reading Comprehension Test (RCT):* A reading test was administered to measure the participants' reading comprehension. Regarding proficiency level of the participants, reading part of a version of Preliminary English Test (PET) developed by University of Cambridge ESOL Examinations, available at Khalifa and Weir (2009), was considered as an appropriate RCT. The reading part of PET included 35 items, organized in five parts in multiple-choice cloze, matching, and true-false forms of questions. The reading test had to be answered in 45 minutes.

3.2.2 *Survey of Reading Strategy (SORS):* In order to measure participants' perceived use of reading

strategies, SORS by Mokhtari and Sheorey (2002) was used. SORS is designed to "measure adolescent and adult English as a Second Language (ESL) learner's meta-cognitive awareness and perceived use of reading strategies (broadly defined here as mental plans, techniques, and actions taken while reading academic or school-related materials) (p. 2)". According to Mokhtari and Sheorey (2002), SORS includes 30 items in three subscales:

- Global Reading Strategies (GLOB): They are 13 items of "intentional, carefully planned techniques by which learners monitor or manage their reading (p. 4)".
- Problem Solving Strategies (PROB): They are 8 items, including "actions and procedures that readers use while working directly with the text. These are localized and focused techniques used when problems develop in understanding textual information (p. 4)".
- Support Strategies (SUP): They are 9 items which involve "basic support mechanisms intended to aid the reader in comprehending the text (p. 4)".

Language learners can reflect their perceived use of strategies mentioned in each of 30 items of SORS, by marking on a five-point Likert scale available after each statement, ranging from "I never or almost never do this" to "I always or almost always do this (Mokhtari & Sheorey, 2002, p. 4)". Regarding the reliability issues, as Mokhtari and Sheorey (2002) claimed, SORS was "field-tested on a population of ESL students, its internal reliability was found to be 0.89, indicating a reasonable degree of consistency in measuring awareness and perceived use of reading strategies among non-native students of English (p. 4)".

3.3 Procedure

To eliminate any possible misunderstanding with English version of SORS it was translated to Farsi, revised, and evaluated by scholars of the field. The reading test was selected with regard to participants' level. The RCT used in current study was reading part of a version of PET, which is appropriate for learners starting intermediate level in EFL. As Farhady, Jafarpur, and Birjandi (1994) mention, to assure that a passage which is selected to be included in a test be at the level of the students, readability formulas can be used. They further offer a useful procedure to do so. First, the average readability of a random sample of reading comprehension passages of participants' course-book must be calculated through one of the readability formulas. Then, readability of each of the passages intended to be included in the test must be calculated through the same readability formula. Further, reading comprehension passages with readability levels of ± standard deviation of the average readability of course book passages would be most likely appropriate to be included in the test. In the current study, Fog Index was used to calculate readability level of reading test and course-book reading comprehension passages.

The readability levels of reading comprehension passages of participants' course-book of ILI Intermediate were calculated. Average readability level of these passages, was found to be 8.81 with SD of 1.48. Therefore acceptable readability level for any reading comprehension passage to be included in the reading test ranged from 7.33 to 10.29. Readability levels of passages of the reading test, which was reading part of a version of PET, were found to be 9.99, 10.07, and 7.64. As Fog Index Level of all PET reading passages fall within the acceptable readability range of 7.33 to 10.29, the reading part of a version of PET was selected to be considered as the RCT to measure participants' proficiency in reading.

To measure the internal consistency and reliability of the RCT and the translated SORS, they were piloted. The participants of the pilot study were a representative sample of the main study participants, consisting of thirty four ILI students (18 girls, and 16 boys) of intermediate level. Kuder-Richardson Coefficient 21 for RCT was found to be 0.871. The Cronbach alpha internal consistency reliability of the translated SORS was .829.

The reliability coefficients of both instruments were considered high according to Farhady et al. (1994) and Vogt (2007). In the main study, the instruments were distributed by the researcher in 19 intact classes among 268 students who were present in that session. Excluding blank and incomplete answer sheets, 114 acceptable answer

sheets were remained; among which 54 ones (47.4%) belonged to male participants and 60 ones (52.6%) belonged to females.

3.4 Data Analysis

After collecting all instruments, complete answer sheets were sorted, and statistical data analysis was run. Descriptive statistics provided mean, standard deviation, and normal distribution for participants' RCT scores, and also their overall, Global, Support, and problem solving reading strategy use scores. Computation of Pearson product-moment correlation coefficient was employed to indicate whether any statistically significant relationship existed between Iranian EFL learners' overall, Global, Support, and Problem Solving reading strategy use and their RCT scores. A simple regression analysis was run to investigate whether the participants' overall reading strategy use is a predictor of their scores on RCT.

A multiple regression analysis was executed to investigate whether the participants' use of any of Global, Support, and Problem Solving reading strategy is a predictor of their scores on RCT. The Statistical Package for the Social Science (SPSS, version 19.0) was used to analyze the data.

4. Results

As Table 1 shows, Pearson Correlation Coefficient between Iranian EFL learners' overall reading strategy use and their RCT scores is found to be [r = 0.237, p = 0.011], which reveals a statistically significant and positive correlation at 0.05 level of significance, and it can be concluded that a statistically significant and positive relationship exists between Iranian EFL learners' overall reading strategy use and their RCT scores. As illustrated in Table 1, Pearson Correlation Coefficient between Iranian EFL learners' Global reading strategy use and their RCT scores is found to be [r = 0.261, p = 0.005], which reveals a statistically significant and positive correlation at 0.01 level of significance, and it is indicated that a statistically significant relationship exists between Iranian EFL learners' Global reading strategy use and their RCT scores. Pearson Correlation Coefficient between Iranian EFL learners' Support reading strategy use and their RCT scores is found to be [r = 0.072, p = 0.446]. Consequently, and it can be concluded that no statistically significant relationship exists between Support reading strategy use of Iranian EFL learners and their RCT scores. Moreover, Pearson Correlation Coefficient between Iranian EFL learners' Problem Solving reading strategy use and their RCT scores is found to be [r = 0.226, p = 0.016], which reveals a statistically significant and positive correlation at 0.05 level of significance and it is indicated that a statistically significant relationship exists between Iranian EFL learners' Problem Solving reading strategy use and their RCT scores.

Table 1

Correlation between use of reading strategy subscales and RCT scores

	Items	RCT Scores	Global RS Use	Support RS Use	Problem Solving RS Use	Overall RS Use
RCT Scores	Pearson correlation	1	0.261**	0.072	0.226*	0.237*
	Sig. (2-tailed)		0.005	0.446	0.016	0.011
	N	114	114	114	114	114

Note. *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

In order to test how well the participant's overall reading strategy use predicted their reading comprehension scores, a simple linear regression analysis was run. The reading comprehension test scores served as the dependent variable, and the scores of overall reading strategy use served as the predictor. As depicted in Table 2, the participants' scores of overall reading strategy was significantly related to their scores of reading comprehension, [F (1, 112) = 6.676, p = *0.011,* p < .05]. Moreover, R^2=0.056 indicated that only 0.056% of the variance of the participants' scores of reading comprehension test could be accounted for by the linear regression of their scores of overall reading strategy use.

Table 2

Model summary[b]

Model	*R*	R Square	*F*	Significance
1	0.237[a]	0.056	6.67	0.011

Note. a. Predictors: (Constant), Reading Strategy. b. Dependent Variable: Reading.

Further, a multiple regression analysis was conducted to examine how well the participant's sores in Global, Support, and Problem Solving reading strategy use predicted their reading comprehension scores. The reading comprehension test scores served as the dependent variable, and the scores on use of each reading strategy subscale, served as the predictors.

As depicted in Table 3, the multiple regression of the participants' scores on use of each reading strategy subscale was significantly related to their scores of reading comprehension, [F (3, 110) = 3.812, $p= 0.012$, $p < 0.05$]. Moreover, R^2=0.094, indicated that only 0.094% of the variance of the participants' scores of reading comprehension test could be accounted for by the linear regression of their scores of reading strategy subscales' use. The correlation coefficient was R = .307.

Table 3

Model summary[b]

Model	*R*	R Square	*F*	Significance
1	0.307[a]	0.094	3.812	0.012

Note. a. Predictors: (Constant), Problem Solving RS, Support RS, Global RS. b. Dependent Variable: Reading.

According to Table 4, it was revealed that among the three subscales of the reading strategies, only the participants' scores on Global reading strategy use could work as a predictor of their reading comprehension test scores, $p = 0.027$, $p < 0.05$. Regarding Beta index of Global reading strategy use, it is revealed that, all the variables held constant, for every unit increase in Global reading strategy use, the RCT score increased by 0.258.

Table 4

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficient	*t*	Significance
		B	Std. Error	*Beta*		
1	(Constant)	28.335	14.153		2.002	0.048
	Global RS	0.712	0.317	0.258	2.248	0.027
	Support RS	-0.611	0.464	-0.149	-1.317	0.191
	Problem SR	0.731	0.480	0.166	1.523	0.131

Note. a. Dependent Variable: Reading

5. Discussions

The findings of the current study indicate a statistically significant and positive relationship between Iranian EFL learners' overall, Global, and Problem Solving reading strategy use and their RCT scores; however, no statistically significant relationship was sought between Support reading strategy use and participants' RCT scores. Moreover, it was revealed that overall reading strategy use and also Global reading strategy use are predictors of RCT scores; however, they are weak predictors. Results of the RQ1, which shows a statistically significant relationship between Iranian EFL learners' overall reading strategy use and their RCT scores, can be interpreted regarding the role of reading strategy use in helping readers achieve a better comprehension when reading a passage, which is emphasized in the realm of EFL (Macaro, 2003; Paris et al., 1991; Pressley and Harris, 2006; Sinatra et al., 2002). Reading strategy use can help readers deal with the problems which rise while reading a passage in a foreign language, and consequently, they can improve individuals' reading comprehension. The findings of RQ1 are in line with findings of, Hosseini Nezhad (2006), and Park (2010); however, in conflict

with the findings of Soi Meng (2006) and Yoku (2009). Such result which shows a statistically significant relationship between Iranian EFL learners' Global reading strategy use and their RCT scores can be explained regarding their function in reading. Strategies pertaining to this subscale can enhance learners' general understanding of a text, and seem to be the kind of strategies which are mostly known by EFL learners, for example, having a purpose in mind when reading, thinking about ones background knowledge, having overall view of the text before reading, using context clues, typographical features, tables, and pictures to better understand the text, etc. As general understanding of a text is the first step to achieve a complete comprehension of that, the higher use of Global reading strategies seem to enhance the reading comprehension. Moreover, this finding is in line with findings of Sheorey and Baboczky (2008), and also Zhang and Wu (2009). However, it contrasts the findings of Yoku (2009).

According to the findings of RQ1, Support strategies are not indicated to have statistically significant relationship with EFL learners' RCT scores. Support reading strategies are defined by Mokhtari and Sheorey (2002), as "basic support mechanisms intended to aid the reader in comprehending the text" (p. 4), for example, underlining, or circling helpful information in the text, reading aloud difficult parts, note taking while reading, translating to L1 when reading, thinking in English and L1 while reading, etc. As English language teachers of institutes in Iran, mostly inhibit their students from using L1 when learning English, items 29 and item 30 of SORS, which respectively deal with translating the text to L1 and thinking in both English and L1 when reading a text, seem not to be utilized by learners. Moreover, Support reading strategies require reader's consistent evaluation of his/her reading comprehension, and also urges active interaction of the reader with the text, which both seem not to be achieved by most of the readers in Iranian EFL context. This is supported by findings of Zhang and Wu (2009), but contrasts the results of Yoku (2009).

Finding of RQ1, which implies that the higher is the learner's Problem Solving reading strategy use, the higher is his/her reading score, directs us to pay closer attention to the role these strategies play while reading a text. Mokhtari and Sheorey (2002) define Problem Solving reading strategies as "actions and procedures that readers use while working directly with the text. These are localized, and focused techniques used when problems develop in understanding textual information" (p. 4), for example, paraphrasing, reading slowly, paying closer attention, rereading, adjusting the reading speed to the text, etc. Strategies on Problem Solving subscale seem to be natural, simple, and common reactions to problems in comprehending a text, which are expected be performed by many of Iranian EFL learners. Finding of RQ1 is in line with findings of Zhang and Wu (2009), but contrasts the findings of Yoku (2009). Findings of RQ2, and RQ3 implied that although overall reading strategy use was found to be predictors of RCT scores, it were of low predictive power, and among reading strategy subscales, only Global reading strategy use could be a predictor of RCT scores. These findings are in line with results of a study by Park (2010).

6. Conclusions and implications

The results have implications for EFL teachers, to motivate them provide their learners with reading strategy training which can lead in better achievements in reading comprehension. In this regard, teachers can provide their students with guess provoking setting, encouraging participation in risk-taking activities, helping learners to find and use contextual clue in the text to explore the meaning of unknown words, exposing learners to reading strategies, activating learners relevant schemata in reading warm-up activities, minimizing the use of dictionaries, and giving reasonable feedbacks to incorrect guesses, to prepare students for a better utilization of reading strategies in general, and Global, or Problem Solving reading strategies in particular.

Considering that language learning is a multidimensional phenomenon, not only are language teachers, but also language learners and material developers, required to play their roles properly in order for language learning to be facilitated and optimized. Therefore, results of current study have implications for language learners, encouraging them to become more conscious about their own strategy use, and utilize reading strategies believing them as powerful learning tools. Material developers, as providers of a large portion of the language

learning setting, have a fundamental role. When reading strategy training hints or motives are inserted in appropriate parts of a course book, teachers are provided with a powerful device to optimize language learning activities, and learners can benefit a more harmonious EFL context.

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