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The Effectiveness of Metacognitive Strategy Awareness in Reading Comprehension: The Case of Iranian University EFL Students

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ABSTRACT

This paper reports a study that explored the overall pattern of metacognitive awareness of reading strategy use and its possible relationship with reading comprehension. Moreover, the study investigated the influence of gender and proficiency level on the use of these strategies. The Survey of Reading Strategies Questionnaire (SORS), the semi-structured interview technique, and a reading comprehension test were used to collect data from a randomly chosen sample. The data were analyzed through descriptive statistics to determine the frequency and type of strategies employed by the learners. Pearson coefficient correlation was also used to discover the relationship between reading strategy use and reading comprehension achievement. Moreover, one-way multivariate analysis of variance (MANOVA) was also employed to find out how the use of strategies varied according to gender. The results revealed that there was a strong positive correlation between reported metacognitive awareness of reading strategies and reading comprehension achievement. The results also showed that the students' knowledge of metacognitive reading strategies were significantly influenced by their levels of English proficiency. According to the findings, Iranian EFL students are moderately aware of reading strategies and the most frequently used strategies were the Support Reading Strategies (SUP), followed by Global Reading Strategies (GLOB), and then Problem-Solving Strategies (PROB). It was also revealed that no significant difference existed between male and female language learners in the use of reading strategies. The findings of this study may have implications for learners, teachers, and materials developers in the field of English language teaching and learning.

INTRODUCTION

The main goal for reading is “comprehension”, and everything else is a means to this end (Goldenberg, 2011; Loew, 1984). Comprehension is the ability to go beyond the words, to understand the ideas in a text and the relationships that exist between those ideas (McNamara, 2007). Traditional views of reading assumed readers, as passive recipients of text information, possessing a large number of sub-skills which automatically apply them to comprehend all kinds of texts; that is, it was assumed that reading comprehension occurred automatically (Dole, 2000;

Dole, Duffy, Roehler, & Pearson, 1991). Then a conceptual shift to a cognitive model of learning in the 1970's led to a different view of the reader as a result of a rethinking about the underlying processes in reading comprehension. Cognitive views of reading comprehension indicate that reading is an interactive and comprehension is a constructive process and that skilled readers are differentiated from weak readers by their flexible use of a set of strategies to make sense of the text and to monitor and regulate their reading processes (Baker & Brown, 1984; Dole et al., 1991).

In second/foreign language (L2) situations, where L2 input sources are limited, reading becomes a viable means of developing L2 ability (Gorsuch & Taguchi, 2010) which, in turn, can facilitate or hinder academic success for many L2 learners across educational contexts (Taylor et al., 2006). Grabe and Stoller (2002) stressed that to become a highly proficient L2 reader is very difficult. Snow (2002) found that many L2 learners have difficulties in understanding what they read especially academic texts. Also, academic second language readers, though they have adequate language competency, to some extent still have difficulties in comprehending those academic texts thoroughly (Eskey, 2005). It seems that L2 students lack proper metacognitive strategies to manage their own reading effectively. Students are uncertain of what metacognitive strategies are and how to use them. Poor readers, especially, do not know what methods are efficient for academic reading, nor do they know how to improve their reading ability. Noticeably, in academic reading comprehension, if students lack metacognitive knowledge, they feel puzzled in adopting the appropriate reading methods and reading strategies (Shokrpour & Fotovatian, 2009). As a result, they cannot self-plan, self-monitor, self-regulate and self-evaluate their own reading skills properly.

In Iran, English is a foreign language and reading English is important for academic purposes. Although English is learned as a subject at school, it continues to be important for university education. Iranian university EFL students are required to learn reading in the classroom in order to successfully gain access to new information for academic purposes. They are also required to take some kinds of standardized tests such as TOEFL and IELTS to pursue further their studies at graduate levels. With strengthened reading abilities, they will make greater progress and attain greater development in all the academic areas (Anderson, 2002). Therefore, academic reading comprehension has become a major challenge. The present study, then, set out to shed light on the relationship between metacognitive awareness of reading strategy use and achievement in reading comprehension within the framework of Iranian universities. The findings of this study have implications for learners, teachers, and materials developers in the field of English language teaching and learning.

REVIEW OF RELATED LITERATURE

Strategies

Strategies for language learning and language use have been receiving evergrowing attention in the areas of L2 teaching and learning (e.g., Brown, 1991; Chamot & Kupper, 1989; Cohen & Macaro, 2007; Cohen & Weaver, 2005; Cohen, 1990; Grabe, 2010; McDonough, 1995; Mendelsohn, 1994; Naiman, Frohlich, Stern, & Todesco, 1978; O'Malley & Chamot, 1990; O'Malley, Chamot, Stewner-Manzanares, Kupper, & Russo, 1985a; O'Malley, Chamot, Stewner-Manzanares, Russo, & Kupper, 1985b; Oxford & Crookall, 1989; Oxford, 1990; Oxford, Park-Oh, Ito, & Sumrall, 1993; Rubin & Thompson, 1994; Rubin, 1975; Rubin, 1981; Stern, 1975; Wenden

& Rubin, 1987; Wenden, 1991). The most general finding among these inquires was that the use of appropriate language learning strategies leads to improved proficiency or achievement overall or in specific skill areas. These studies also supported the notion that the use of appropriate learning strategies enables students to take responsibility for their own learning by enhancing learner autonomy, independence, and self-direction (Oxford & Nyikos, 1989). In line with that, it appears to be extremely important that teachers of L2 learning should learn to identify and comprehend how the strategies of their students are functioned in varied language activities. Further, O'Malley et al. (1985b) suggested that the learning strategies of good language learners, once identified and successfully taught, could have considerable potential for enhancing the development of language skills.

Several key definitions of learning strategies have been given by a number of leading figures in the foreign and second language field. However, Oxford (1990) provides one of the most comprehensive definitions: "Language learning strategies are: operations employed by the learner to aid the acquisition, storage, retrieval, and use of information... specific actions taken by the learners to make learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (p. 8). In Oxford's (1990) definition, several student-intended goals are evident. These are related to aspects of learning and use of information, as well as to the changed nature of learning when learning is enhanced by strategies ("easier, faster, and more self-directed"). Based on her synthesis of previous research and on factor-analytic, questionnaire-based studies of LLSs among adult learners, Oxford developed one of the most widely accepted classification taxonomies in the language learning area. Oxford's (1990) model of language learning strategies consists of six categories: memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies.

Among language learning strategies, metacognitive strategies are regarded as high order executive skills that make use of knowledge of cognitive processes and constitute an attempt to regulate ones' own learning by means of planning, monitoring, and evaluating. When applied to reading, metacognitive strategies are self-monitoring and self-regulating activities, focusing on both the process and the product of reading. They include the readers' perception of whether or not they can comprehend what they read; their ability to judge the cognitive demands of reading task; and their knowledge of when and how to employ a specific cognitive reading strategy according to text difficulty, situational constraints, and the reader's own cognitive abilities (Baker & Brown, 1984; Gourgey, 2001; Hamdan, Ghafar, Sihes, & Atan, 2010). It has been suggested, "Students without metacognitive approaches are essentially learners without direction or opportunity to review their progress, accomplishments, and future learning directions" (O'Malley et al., 1985b, p. 561). The use of metacognitive strategies in the reading process has been generally supported as a valuable aid for its cognitive, social, linguistic benefits. Many studies (Carrell, 1995; Chamot, 2005; Wenden, 2001) have addressed the positive effects of utilizing metacognitive strategies in the reading process. Metacognitive strategies also assist learners in becoming more effective learners by allowing them to individualize the language learning experience.

Reading

Reading is most emphasized in traditional foreign language teaching and learning, and even today is the mainstay of English as a foreign language (EFL) instruction in many countries (Susser & Robb, 1990). According to Chastain (1988), reading skill will facilitate communicative fluency in each of other language skills. Reiss (1983) contends that "the more our students read, the more

they become familiar with the vocabulary, idioms, sentence patterns, organization flow, and cultural assumptions of native speakers of the language” (p. 50). The importance of reading is also addressed by many other researchers. Rivers (1981) believes that reading is the “most important activity in any language class” (p. 259). He further argues that most of the EFL learners will never have the chance to converse with native speakers; but they will have access to the literature and periodicals of scientific and technical material written in English which is, in fact, what they need to assist them with further studies or in their work; or even in their leisure time. Accordingly, Eskey (2005) noted that many EFL students may not need to speak English in their daily lives but they need to read it to access the richness of information in English. According to Alderson (1983), “A reading ability is often all that is needed by learners of English as a foreign language (EFL)” (p. 1). Keshavarz & Mobarra (2003) also stated that, “The ability to read efficiently in any language has always been regarded as the main manifestation of literacy” (p. 101). They believed, “the better one can read in a language, the more learned he or she is expected to be” (ibid). McNamara (2004) also regards “understanding of learning from written material as one of the most important skills to process in modern society” (p. 1).

Reading and learning to read, according to Wallace (1992), is a social, interactive process as well as a personal activity. As most L2 learners have little or no contact with foreign native speakers, reading can serve to fill this gap. Besides, the reading skill, once developed, is the one which can be most easily maintained to a high level by the students themselves without help from a teacher (Rivers, 1981). Moreover, the ability to read is acknowledged to be the most stable and durable of the second language modalities (Bernhardt, 1991).

While most scholars agree that reading comprehension is the meaning gained from what is written on the page, they often disagree about the source of meaning. Currently the most prevalent metaphors in the literature are the bottom-up, top-down, and interactive models of reading to improve comprehension. Bottom-up processing model lays primary emphasis on textual decoding. It is the mechanical, word-driven process in which readers move from lower-level processes to higher-level processes (Stanovich, 1980; Phakiti, 2006). That is, readers attend to individual letters and words, utter them out, and eventually figure out the structure of and assign meaning to larger syntactic units. Lower-level (i.e., bottom-up) processes are comprised of a variety of complex skills (e.g., word-recognition, word-integration or syntactic parsing, and proposition formation) (Eskey, 2005). In contrast, top-down models place primary emphasis on reader interpretation and prior knowledge. They are seen as concept-driven, in the sense that the text is “sampled” and predictions are made on the basis of the reader’s prior syntactic and semantic knowledge (Goodman, 1967). This processing model is the hypothesis-driven process in which readers, directed by their goals, expectations and strategic processing, actively control the comprehension process (Grabe, 2009). They generate hypotheses and use their background knowledge and experiences to make inferences. For example, they form predictions of what will come next, test their predictions and verify or adjust them. They resort to decoding symbols only when comprehension breaks down.

A third metaphor posits interactive processing in seeking to explain the reading process. The term interactive approaches can refer to two different conceptions: (a) to the general interaction between reader and text, that is, the reader makes use of information from his/her background or prior knowledge in (re)constructing the text information; and (b) to the interaction of many component skills—ranging from rapid lower-level automatic skills to higher-level strategic, comprehension skills—that work together simultaneously in the process (Alderson, 2000; Grabe, 1991; McLeod & McLaughlin, 1986). It is important to note that these two levels of

interaction are complementary. That is, reading involves an array of lower-level rapid, automatic identification skills and an array of higher-level comprehension/interpretation skills" (Grabe, 1991; Williams & Moran, 1989). It is widely believed that comprehension results from these interactive variables operating simultaneously rather than sequentially.

Studies on Metacognitive Reading Strategy Awareness

Some studies have specifically investigated the usefulness of metacognitive strategy awareness and use on the development of students' reading comprehension (e.g., Alhaqbani & Riazi, 2012; Al-Khateeb, 2011; Alsheikh, 2009; Baker, 2008; Barnett, 1988; Brantmeier & Dragiyski, 2009; Carrell, 1989; Carrell, Gajdusek, & Wise, 1998; Carrell, Pharis, & Liberto, 1989; Chern, 1993; Dhanapala, 2010; Hassin, 2008; Jafari & Shokrpour, 2012; Jimenez, Puente, Alvarado, & Arrebillaga, 2009; Karbalaei, 2010; Madhumathi & Ghosh, 2012; Mokhtari & Perry, 2008; Mokhtari & Reichard, 2002; Mokhtari & Reichard, 2008; Mokhtari & Sheorey 2002; Muñiz-Swicegood, 1994; Onovughe & Hannah, 2011; Philip & Hua, 2006; Shang, 2010; Sheorey & Mokhtari, 2001; Sheorey, & Baboczky, 2008; Shokrpour & Fotovatian, 2009; Zare, 2013; Zare-ee, 2007; Zhang & Seepho, 2013; Zhang & Wu, 2009). For instance, Barnett (1988) conducted a study of L2 reading with French language students, and the result showed that the proficient readers indicated more awareness of their use of metacognitive reading strategies in reading comprehension than less proficient readers. Carrell (1989) examined metacognitive awareness of reading strategies by two groups of learners in their L1 and L2, and the relationship between their awareness and reading comprehension. The results also showed that L2 learners of English at an advanced level tended to use more global strategies than lower level learners of Spanish. Chern (1993) found that there was a positive relationship between readers' metacognitive reading strategy awareness and their reading comprehension process in EFL/ESL learners. In another study that focused on reading academic materials, Sheorey and Mokhtari (2001) found that there was a relationship between the students' reading ability and the reported reading strategies, regardless of the level of reading ability. This result confirmed the observation that skilled readers use more strategies than less skilled readers as a result of their high metacognitive awareness of the variety of reading strategies.

Another study was conducted by Shokrpour & Fotovatian (2009) to explore the effects of instructing metacognitive strategies on Iranian EFL readers' comprehension. The results revealed a significant improvement in the experimental group who were trained to use metacognitive strategies consciously in their reading tasks as compared with the control group. The relationship between reading strategy and reading comprehension was also explored by Madhumathi and Ghosh (2012). They observed that Indian students mostly preferred to apply problem-solving strategies in academic reading, followed by supporting strategies, and they least preferred global strategies. Besides, significant differences existed in student strategy use, except for the supporting strategy. Furthermore, significant gender differences were observed in strategy use; female students exhibited superior performance. The relationship between reading strategies and reading comprehension achievement was also confirmed.

Alhaqbani and Riazi (2012) observed that problem-solving strategies were more useful than global and support strategies for students studying Arabic as a second language. The study also indicated that junior and senior students demonstrated consistently higher strategy use in all categories compared to first- and second-year students. Kudeir, Magableh, Nsser, & Alkawaldehy (2012), in their study on undergraduate students at Yarmouk University, observed that problem-

solving strategies were most commonly used, followed by the moderate use of support reading strategies, as well as moderate use of global reading strategies. Their results also revealed significant gender differences, and that female participants performed better, science faculties outperformed other faculties, and high academic achievers demonstrated superior reading strategy use.

Jafari & Shokrpour (2012) investigated the reading strategies of Iranian ESP students when they read authentic expository texts in English. Their findings showed that the participants are moderately aware of reading strategies and the most frequently used strategies were support strategies, followed by global strategies, and then problem-solving strategies. Zare (2013), in his study on eighty Iranian EFL learners, found out that learners can be categorized as medium strategy users and that there is no significant difference in the use of reading strategies between male and female language learners. He also observed that the use of reading strategies had a strong positive correlation with reading comprehension achievement.

In a different study, Soleimani & Hajghani (2013) taught a group of 53 students to employ reading comprehension strategies in reading some English texts during a period of 15 sessions. The findings of their study showed that while strategy training appeared to raise students' awareness of reading strategies and could encourage strategy use by some students, the reading strategy instruction was not able to enhance statistically the students' reading performance.

Taking a look at studies reported above, there is still a paucity of research into exploring the possible relationship between the metacognitive awareness of reading strategies and the learners' development of reading comprehension within Iranian context. Therefore, the present study attempts to explore the issue more deeply by measuring students' awareness of metacognitive strategies and the relationship it might have with students' achievement in reading performance. The present study, then, asked the following research questions:

1. What is the overall pattern, type and frequency of metacognitive reading strategies reported by Iranian EFL students?
2. Is the overall pattern of metacognitive awareness of reading strategy use related to students' proficiency level?
3. Does the students' metacognitive awareness of reading strategy use have any relationship with their English reading comprehension achievement?
4. Is there a significant difference in strategy use by gender?

METHOD

Participants

The sample consisted of 100 English majors (31 males and 69 females) who were selected randomly from among 400 undergraduate EFL majors studying at different universities in Tehran, Iran. They ranged in age from 20 to 27 and had already studied English for 6 years at school. To determine their level of English proficiency, the Michigan Test of English Language Proficiency (MTELP) was administered. The possible scores ranged from zero to one hundred. Then, according to the mean score and the standard deviation of the test, they were assigned to high, mid and low groups. Those students whose scores fell one standard deviation below and above the

mean were assigned as the mid group. Those subjects whose scores were two standard deviations below and above the mean were classified as the low and high groups respectively.

Instruments

Four main instruments were used in the study: the Survey of Reading Strategies (SORS), semi-structured interview, Michigan Test of English Language Proficiency (MTELP), a background questionnaire, and a reading comprehension test.

The Survey of Reading Strategies (SORS)

To measure the metacognitive awareness of reading strategies in the experimental and control groups before and after the intervention, this study employed the Survey of Reading Strategies, or SORS (Mokhtari & Sheorey, 2002; Mokhtari, Sheorey, & Reichard, 2008). Initially, Mokhtari and Richard (2002) developed a questionnaire which was called Metacognitive Awareness of Reading Strategies Inventory (MARSI). It was designed to measure metacognitive consciousness of reading strategies of students who were native speakers of English. Later, Mokhtari and Sheorey (2002) designed the SORS that could measure metacognitive perception of reading strategies of adolescent and adult students who had English as their second or foreign language. The SORS has been extensively adapted not only in ESL contexts but also in different EFL contexts, such as in Hungary (Sheorey & Baboczky, 2008), Japan (Sheorey, Kamimura, & Freirmuth, 2008), and Bahrain (Malcolm, 2009). In some cases, the SORS has been translated into participants' L1s, such as Arabic (Alhaqbani & Riazi, 2012; Alsheikh, 2009) and Chinese (Zhang & Wu, 2009), to discover the differences between learners' use of reading strategies in their L1 and L2. The SORS has been tested with ESL college students and the internal consistency of the questionnaire obtained through Cronbach's alpha was reported to be 0.89 (Mokhtari & Sheorey, 2002). The questionnaire was found to be suitable for the purpose of the present study because it is specifically designed to assess L2 learners' metacognitive awareness of reading strategies while reading academic materials (Mokhtari & Sheorey, 2002). The SORS covers three broad subcategories of strategies including:

- 1) Global Reading Strategies (GLOB), which can be thought of as generalized, intentional reading strategies aimed at setting the stage for the reading act (e.g., evaluating what to read or ignore, noting text characteristics, guessing what the material is about, etc.), contains 13 items, #1, #3, #4, #7, #10, #14, #17, #19, #22, #23, #25, #26, #29.
- 2) Problem-Solving Strategies (PROB), which are localized, focused problem-solving or repair strategies used when problems develop in understanding textual information (e.g., re-reading for better understanding, going back when losing concentration, pausing and thinking about reading, etc.), contains 8 items, #8, #11, #13, #16, #18, #21, #27, #30.
- 3) Support Reading Strategies (SUP), which provide the support mechanism aimed at sustaining responses to reading (e.g., underlining or circling information, paraphrasing for better understanding, going back and forth in the text, contains 9 items, #2, #5, #6, #9, #12, #15, #20, #24, #28.

In this instrument each item is accompanied with a 5-point, Likert-type scale, 1 (never or almost never do this), 2 (only occasionally do this), 3 (sometimes do this), 4 (usually do this), 5

(always or almost always do this). The higher the number that respondents indicate applies to them, the more frequent the use of the particular strategy is reflected. Mokhtari and Sheorey (2002) provided a key to interpreting the mean for each item and overall item ratings of the SORS. They considered a mean ≤ 2.4 as low usage, 2.5–3.4 as medium usage, and ≥ 3.5 as high usage.

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).

To check the reliability of the instrument for Iranian learners, the SORS was piloted by 48 undergraduate EFL majors (male = 22, female = 26) who were selected through cluster random sampling from EFL majors studying at different universities in Isfahan. The obtained Alpha Coefficient for the 30-item SORS was 0.84, indicating a highly reliable index for the questionnaire. Likewise, the reliability of the SORS for the main study was 0.88, using Cronbach’s Alpha. Table 1 presents further details on the reliability of the SORS with the data from the current study.

To check the validity of the scale, Mokhtari and Reichard (2002) compiled an initial collection of 100 reader strategies, and presented it to three experts on teaching and reading strategy assessment. They suggested 40 items to be deleted and as a result 60 items were retained for the initial student test sample. The students were asked to indicate any items that were unclear to them. The use of factor analysis reduced the number of items to 30, which were distributed into three subscale categories. The revised version was then presented to the experts to be tested for appropriateness and clarity, and based on their revisions the final version was subsequently compiled. The validity of the instrument was also checked by evaluation done by some experts in the field of applied linguistics.

Semi-structured interview

In order to get a fuller picture of students’ strategy use and permit a degree of triangulation in the study, some students were chosen randomly from each proficiency group and interviewed by the researcher. The students were asked questions about whether they were familiar with the strategies before the instruction, whether researchers’ modeling of the strategies helped them follow the strategies more easily, which strategies they found most useful, and how they felt about the usefulness of the strategy instruction program and its effect on their reading comprehension ability.

Background questionnaire

Also, a background questionnaire of Mokhtari (2008, pp. 159-160) was adapted to determine how similar the experimental and control groups were in the following areas: participants’ nationality, age, starting age of learning, previous language study, reasons for studying the target language, contact with native speakers (how, where, and why they had had contact), and visits to the target culture (for work, vacation, etc.). T-tests indicated that the two groups did not differ significantly on any of the background characteristics.

Reading Comprehension test

A reading comprehension test was designed and piloted. The test comprised 50 multiple-choice items with 5 authentic passages, ranging from 125 to 150 words in length and the average

readability index 7, using Fog Index. The topics of the test were related to the topics of the students' textbook taught in their classes and were mostly selected from *Reader's Digest*, which has interesting, popular, universal, and reader-friendly topics (Hwang, 2005). The magazine was chosen because according to Porter-Ladousse (1999), magazines are example of authentic materials. Furthermore, they include different types of text with various illustrations which help students in implementing language learning strategies.

To compute the internal consistency and reliability of the instrument, it was given to 48 undergraduate EFL majors (male = 22, female = 26) who were selected through cluster random sampling so as to represent the entire sample of subjects chosen for the main study. The reliability of the test computed through KR-21 indicator of reliability was 0.83, indicating that the test enjoyed a reliable measure of reading ability. Likewise, the reliability of the test calculated for the main study was 0.89, using KR-21. The validity of the instrument was also checked by evaluation done by some scholars in the field.

To measure the reading ability of the participants, all subjects from the experimental and control groups were asked to complete the same test on a pre-posttest basis to determine whether there were gains in reading ability over the fourteen-week term. The reading test was expected to elicit a range of metacognitive reading strategies, including GLOB, PROB, and SUP strategies.

The Michigan Test of English Language Proficiency (MTELP)

The Michigan Test of English Language Proficiency (MTELP) was given to the participants to determine their levels of proficiency. To check the reliability of the test in Iranian context, the obtained reliability of the test, using KR-21 measure of internal consistency was 0.80. The reliability of the test for the main study was 0.87

Procedures

Prior to data collection, the participants were informed of the purpose and benefits of the study, the protection of anonymity and confidentiality, and the steps involved. At the first phase, participants were asked to complete the background questionnaire. Then, to determine their levels of proficiency, the MTELP was administered. The researcher also provided the participants with the necessary information about what they were required to do. At the second phase (next session), the subjects took the reading comprehension test and its administration took place approximately 60 minutes. After administering the test of reading comprehension, the SORS was given to students in order to assess their awareness of the metacognitive strategies in reading comprehension. The students were asked to read each statement carefully and circle the number that applied to them, indicating the frequency with which they used the reading strategy. The subjects were also told that they should ask for any clarification they might need and any other extra time as they filled out the questionnaire. Almost all of them had no difficulty in understanding the questionnaire. Soon after that, the semi-structured interview was conducted with some randomly selected students. The interviews were tape-recorded, transcribed and translated into English for further analysis.

Data Analyses

The Statistical Package for the Social Sciences (SPSS) was employed for the statistical analysis of the data and the significance level of $p < .05$ was set. The data were analyzed through descriptive statistics to determine the frequency and type of strategies employed by the learners. Independent sample t-test was also employed to find out how the use of strategies varied according to gender. In addition, Pearson coefficient correlation was used to explore the relationship between reading strategy use and reading comprehension achievement. For scoring the reading comprehension and MTELP, one score was assigned to each correct answer. The scores for all items were then added up and an ultimate score was calculated for every participants.

RESULTS AND DISCUSSION

Research Question #1: What is the overall pattern, type and frequency of reading strategies reported by Iranian EFL students?

The descriptive statistics (see Table 1) show that the most frequent use of the metacognitive reading strategies was found to be SUP ($M = 3.26$, $SD = .86$), followed by GLOB ($M = 2.91$, $SD = 1.22$), and then PROB ($M = 2.37$, $SD = .93$). According to the overall mean of reading strategy use ($M = 2.51$), Iranian EFL learners seem to be moderately aware of reading strategies.

Table 1. Descriptive statistics for the three subscales and overall use

SORS Subscales	Mean	SD	Rank
Global Reading Strategies (GLOB)	2.91	1.22	2
Problem-Solving Strategies (PROB)	2.37	.93	3
Support Reading Strategies (SUP)	3.26	.86	1
Overall Reading Strategy Use	2.51	1.00	

According to descriptive statistics in Table 2, participants' awareness of reading strategy use showed that 12 reading strategies were used at a high-usage level (Mean = 3.5 or higher), 9 at a moderate-usage level (Mean = 2.5–3.4) and 9 at a low-usage level ($M = 2.4$ or lower). The five highest means are GLOB #1 ($M = 4.28$), GLOB #3 ($M = 4.19$), GLOB #4 ($M = 3.99$), GLOB #19 ($M = 3.96$), and SUP #28 ($M = 3.92$). The five least means are GLOB #22 ($M = 1.18$), SUP #5 ($M = 1.10$), GLOB #29 ($M = 1.04$), PROB #16 ($M = 1.03$), and PROB #30 ($M = 1.00$).

Table 2. Descriptive statistics for each strategy item

Rank	Strategy	Type	Mean	SD.	Average use
1	1	GLOB	4.28	1.20	High
2	3	GLOB	4.19	.87	High
3	4	GLOB	3.99	1.41	High
4	19	GLOB	3.96	1.19	High
5	28	SUP	3.92	1.01	High
6	24	SUP	3.80	1.21	High
7	17	GLOB	3.79	1.01	High
8	10	GLOB	3.78	1.11	High

9	20	SUP	3.70	1.20	High
10	6	SUP	3.64	.91	High
11	2	SUP	3.55	1.21	High
12	27	PROB	3.50	1.05	High
13	15	SUP	3.49	1.33	Medium
14	26	GLOB	3.26	.95	Medium
15	13	PROB	3.24	1.25	Medium
16	12	SUP	3.22	1.12	Medium
17	23	GLOB	3.08	.92	Medium
18	9	SUP	2.97	.95	Medium
19	11	PROB	2.73	1.18	Medium
20	21	PROB	2.70	1.32	Medium
21	18	PROB	2.66	1.10	Medium
22	7	GLOB	2.11	1.12	Low
23	8	PROB	2.10	1.11	Low
24	25	GLOB	1.83	1.02	Low
25	14	GLOB	1.37	1.16	Low
26	22	GLOB	1.18	1.04	Low
27	5	SUP	1.10	1.06	Low
28	29	GLOB	1.04	1.28	Low
29	16	PROB	1.03	1.04	Low
30	30	PROB	1.00	1.19	Low

According to the overall means of the SORS subscales, the SUP strategies were the most preferred metacognitive strategies according to the students' reports. Strategies such as "When I read, I guess the meaning of unknown words or phrases" (Item #28, $M = 3.92$), "I try to guess what the content of the text is about when I read" (Item #24, $M = 3.80$), "I use typographical features like bold face and italics to identify key information" (Item #20, $M = 3.70$), "I think about whether the content of the text fits my reading purpose" (Item #6, $M = 3.64$), and "I take notes while reading to help me understand what I read" (Item #2, $M = 3.55$), were the most preferred ones and used at a high-usage level. On the contrary, item #5 "When text becomes difficult, I read aloud to help me understand what I read" was the least preferred SUP strategy ($M = 1.10$) and used at a low-usage level.

The choice of GLOB strategies as the second most favored category might be interpreted as indicating that the students had the ability to plan and manage their reading comprehension process. Regardless of the overall means of the SORS subscales and with regard to the mean of each individual item, the first four most preferred strategies were GLOB strategies, including item #1 "I have a purpose in mind when I read" ($M = 4.28$), item #3 "I think about what I know to help me understand what I read" ($M = 4.19$), item #4 "I take an overall view of the text to see what it is about before reading it" ($M = 3.99$), and item #19 "I try to picture or visualize information to help remember what I read" ($M = 3.96$). Moreover, some GLOB strategies that the participants reported to use displayed their online decision making. Strategies such as "I use context clues to help me better understand what I am reading" (Item #17, $M = 3.79$) and "I underline or circle information in the text to help me remember it" (Item #10, $M = 3.78$) possibly contribute to better regulation of their reading comprehension. On the contrary, GLOB strategies such as "When reading, I translate from English into my native language" (Item #29, $M = 1.04$), "I go back and forth in the text to find relationships among ideas in it" (Item #22, $M = 1.18$), "When text becomes difficult, I pay closer attention to what I am reading" (Item #14, $M = 1.37$), and "When text

becomes difficult, I re-read it to increase my understanding” (Item #25, $M = 1.83$) were among the least preferred strategies and used at a low-usage level.

The PROB strategies were the least preferred strategies according to the students’ reports. Among this subcategory, only strategy “I check to see if my guesses about the text are right or wrong” (Item #27) was used with a high-usage level ($M = 3.50$). Among all 30 strategies, “I stop from time to time and think about what I am reading” (Item #16, $M = 1.03$) and “When reading, I think about information in both English and my mother tongue” (Item #30, $M = 1.00$) were the least preferred ones with a low-usage level. Item #13 “I use reference materials (e.g. a dictionary) to help me understand what I read” ($M = 3.24$), item #11 “I adjust my reading speed according to what I am reading” ($M = 2.73$), item #21 “I critically analyze and evaluate the information presented in the text” ($M = 2.70$), and item #18 “I paraphrase (restate ideas in my own words) to better understand what I read” ($M = 2.66$) were used at a moderate-usage level.

As shown in Table 1, the primary preference for SUP strategies, followed by GLOB strategies and then by PROB strategies is in line with studies where subjects nominated support strategies as their favored choice, for instance, Hungarian university students (Sheorey & Baboczky, 2008) and both ESL students and native English speaking U.S. college students (Sheorey & Mokhtari, 2001). However, this preference is not consistent with several previous enquires that investigated the awareness of reading strategies via SORS (e.g., Alhaqbani & Riazi, 2010; Alsheikh, 2009; Alsheikh, 2011; Dhanapala, 2010; Mokhtari and Reichard, 2002; Mokhtari, 2008; M6nos, 2005; Riazi, 2007; Sheorey & Baboczky, 2008; Sheorey & Mokhtari, 2001; Zhang & Wu, 2009).

The results of this study were also partially consistent with some studies that assessed the metacognitive awareness of reading strategy by using MARSII. A study by Mokhtari and Reichard (2002) indicated that the total average use of reading strategies was moderate, and the prime preference was for problem-solving, followed by global and support reading strategies. Although, the results of the present study showed that the total average use of reading strategies was moderate, the order of preference was exactly the reverse.

Research Question #2: Is the overall pattern of metacognitive awareness of reading strategy use related to students’ proficiency level?

The descriptive statistics (see Table 3) regarding the means, overall means and standard deviations of the SORS scores on the three strategy subcategories for three proficiency levels show that high proficiency students enjoyed high overall awareness of metacognitive strategies than other proficiency groups. SUP strategies were the most preferred strategies ($M = 3.79$), followed by GLOB ($M = 3.65$) and PROB ($M = 3.20$) strategies. With regard to overall mean ($M = 3.54$), they also reported higher perception of metacognitive strategies than other proficiency groups.

Table 3. Descriptive statistics for the three proficiency groups on the SORS subscales

Strategy	GLOB			PROB			SUP			Overall Mean		
	Low	Mid	High	Low	Mid	High	Low	Mid	High	Low	Mid	High
Mean	2.16	2.84	3.65	2.00	2.33	3.20	2.30	2.71	3.79	2.15	2.62	3.54
SD	1.08	1.14	1.15	1.11	1.10	1.10	1.03	1.16	1.13	1.07	1.13	1.12

Based on the findings of this part of the study, one may conclude that there appears to be a strong relationship between effectiveness of strategy instruction and proficiency level. In fact, highly proficient or skilled readers seem to use more strategies than poor or less skilled readers and also

appear to use them more frequently. Skilled readers also have an enhanced metacognitive awareness of their own use of strategies, which in turn can lead them to greater reading ability and proficiency. Skilled readers are also able to monitor and evaluate their learning processes while reading. They know which strategies to use and how and when to use them. This suggestion is supported by Sheorey and Mokhtari's (2001) research, which found that those students who rated themselves as having high L2 reading proficiency used significantly more strategies than those who gave themselves a lower self-rating. The findings of this study are, therefore, in line with those obtained by some previous studies (e.g., Anderson, 1991; Baker & Brown, 1984; Block, 1992; Cabral & Tavares, 2002; Carrell et al., 1989; Garner, 1987; Pressley & Afflerbach, 1995; Upton, 1997; Yang, 2002; Zhang, 2001). In these studies, the connection between advanced reading proficiency and active strategy use has been documented for university EFL students.

Research Question #3: Does the students' metacognitive awareness of reading strategy use have any relationship with their English reading comprehension achievement?

Pearson correlation analysis was run to examine whether the participants' overall use of metacognitive strategies was correlated with their English reading comprehension scores. As demonstrated in Table 4, the overall reading strategies and the reading comprehension achievement were significantly and positively correlated ($r = .528$, $p = .005$). It means that the students who used more metacognitive strategies tended to score higher on the reading comprehension test, whereas the students who used fewer metacognitive strategies were likely to get low scores. All the three subscales were also positively correlated with reading achievement. Among them, SUP strategies held the highest correlation with reading achievement ($r = .676$, $p = .012$), GLOB strategies ranked the second ($r = .533$, $p = .009$) and PROB strategies ranked the last ($r = .375$, $p = .006$).

Table 4. Pearson Correlation between strategy subcategories and reading comprehension achievement

Strategy category	Analyses	Reading Comprehension Achievement
GLOB	Pearson Correlation	.533**
	Sig. (2-tailed)	.009
PROB	Pearson Correlation	.375**
	Sig. (2-tailed)	.006
SUP	Pearson Correlation	.676**
	Sig. (2-tailed)	.002
Overall Reading Strategies	Pearson Correlation	.528**
	Sig. (2-tailed)	.005

Note: ** $p < 0.05$

Altogether, the findings are in line with those of studies (e.g., Allen, Bernhardt, & Demel, 1988; Baker & Boonkit, 2004; Clark, 1979; Cubukcu, 2008; Gou, 2008; Griffiths, 2003; Hassin, 2008; Hong, 2007; Mosallae-pour, 1997; Soleimani, 2008; Van Gelderen, Schoonen, De Gloppe, Hulstijn, Simis, Snellings, & Stevenson, 2004; Willingham, 2006; Yamashita, 1999; Zare-ee, 2007) that found there is a significant correlation between metacognitive awareness and reading comprehension among EFL and ESL readers, suggesting that the higher the students' second language proficiency, the higher their L2 reading comprehension performance would be. However, with regard to the pattern of correlations in Table 4, the findings are in sharp contrast with those

reported by previous studies (e.g., Alhaqbani & Riazi, 2012; Mónos, 2005; Sheorey & Mokhtari, 2001).

Research Question #4: Is there a significant difference in strategy use by gender?

A one-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate gender differences in the SORS three strategy subcategories (i.e., GLOB, PROB, and SUP strategies). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted. As shown in Table 5, there was not found any statistically significant difference between males and females on the combined dependent variables: $F = .525$, $p = .666$; Wilks' Lambda = .984; partial eta squared = .016. However, an inspection of the mean scores indicated that females reported slightly higher levels of GLOB strategies ($M = 2.98$, $SD = 1.16$) than males ($M = 2.96$, $SD = 1.17$). With regard to PROB strategies, mean difference is in favor of males ($M = 2.50$, $SD = .90$) as compared with their female counterparts ($M = 2.28$, $SD = .83$). Also, negligible mean difference was found on SUP strategies between males ($M = 3.243$) and females ($M = 3.239$).

Table 5. Results of Multivariate analysis of variance for difference in strategy use by gender

	Effect	Value	F	Sig.	Partial Eta Squared
Gender	Wilks' Lambda	.984	.525	.666	.016

The results largely supported what Sheorey and Mokhtari (2001) discovered. They studied the metacognitive and cognitive strategies of second language readers. The participants consisted of 152 ESL students (92 males, 60 females) studying at the freshman level at a large Midwestern US university. The participants completed a 28-item quantitative survey. The results showed there to be no significant overall differences between males and females, and only one individual strategy in which there were significant differences, in which females used more strategies than males. One of the few studies that specifically looks at male/female differences in reading strategies is that of Poole (2005) who compared the academic reading strategies of 248 (138 = male; 110 = female) advanced college ESL students. The results showed very few strategic differences, with both genders using strategies with medium or high frequency. These findings suggest that advanced ESL readers' strategies are primarily influenced by factors other than gender.

These findings are also at odds with some previous strategy research (e.g., Jimenez, et al., 2009; Kudeir et al., 2012; Madhumathi & Ghosh, 2012; Phakiti, 2003; Zare, 2013) which generally has found that males and females are significantly different with respect to their reading strategy use. For example, Phakiti (2003) examined how 384 male ($N = 173$) and female ($N = 211$) Thai college students utilized cognitive and metacognitive strategies while taking a final exam at a large Thai university. Using questionnaires that asked students to recall the strategies that they used, the researcher found that while there were no significant differences between males and females in terms of the cognitive strategies they used, men used significantly more metacognitive strategies than their female counterparts, even across different proficiency levels.

CONCLUSION AND IMPLICATONS

The findings of the present study indicated that Iranian ELL learners are moderately aware of metacognitive strategy use in reading comprehension. Furthermore, all the three sub-metacognitive strategies were positively correlated with reading achievement. The Support Reading Strategies (SUP) held the highest correlation with reading achievement, the Global Reading Strategies (GLOB) ranked the second and the Problem-Solving Strategies (PROB) ranked the last. It was also concluded that the awareness and use of reading strategies had a positive and strong correlation with reading comprehension achievement. In fact, those EFL students who employ more strategies and use them as frequently as possible are likely to show higher success in reading comprehension. The results also showed that there is not any statistically significant difference between male and female students in terms of strategy use.

The findings of the present study may have implications for learners, teachers, and materials developers in the field of teaching English as a foreign language. University EFL learners need to recognize more fully that developing and applying reading strategies could improve their reading ability in their content subjects and also their academic performance. Use of appropriate learning strategies in general and reading strategies in particular can enable students to take responsibility for their own learning by enhancing learner autonomy, independence and self-direction (Dickinson, 1987). Successful language learners may serve as informants for students experiencing less success in language learning. These factors are important because learners need to keep on reading when they are no longer in a formal classroom setting (Oxford & Crookall, 1989). Nevertheless, university students cannot be expected to acquire and employ successful reading strategies incidentally; many come to language classes without a full understanding of what is expected of them. These students continue to use inappropriate strategies with no perception of the limitations of their habitual way of reading and learning or more productive options for completing academic tasks (Dreyer & Nel, 2003). Therefore, language teachers should help students know not only what strategies to use but also when and how to employ them; that is, they should move learners from “learning to read” to “reading to learn” (Alhaqbani & Riazi, 2012). In this respect, explicit modeling of the strategy use seems to be one of the most useful techniques for the strategy instruction program. To put it another way, the teachers should explain the characteristics, usefulness, and applications of the strategy explicitly and through several examples and illustrate his/her own strategy use through a reading task. Learners should be explicitly taught about how the strategy is used, why it is important and when and how it applies to the specific task at hand. In essence, the preparation and planning, the selection of appropriate reading strategies, the rationale behind strategy use, monitoring of strategy selection and use, and evaluation of usefulness of metacognitive strategies for reading comprehension should be all elaborated on and exemplified. Furthermore, language teachers should provide students with multiple and repeated opportunities to practice the new strategies on a variety of learning tasks and activities so that eventually the strategy itself becomes part of students’ procedural knowledge. It is also beneficial that the teacher periodically checks what students have understood and provides them with constructive feedback in order to help them expand their strategy use beyond the language classroom. Such an approach seems to help students become strategic and independent language readers.

Teachers can also help students identify their current metacognitive awareness of reading strategies by means of a variety of data collection methods and awareness-raising techniques such as questionnaires, informal self-checklists, one-on-one and group interviews, diaries, verbal

reports, cooperative learning groups, strategy workshops, and other means. They can also assist their students to learn quicker, easier, and more effectively by weaving reading strategy training into their regular classrooms activities and tasks. Moreover, classroom teachers should be aware of possible strategic differences and preferences among males and females. According to Brantmeier (2001), passage content may be related to reading success; that is, males are likely to do better on more science-oriented passages, while females achieve higher reading scores on humanities-related topics. Such findings presumably are related to the self-perceived interests of both genders and probably involve using different strategies. As a result, when measuring learners' reading strategies, teachers should avoid using passages that could be biased towards one gender and against the other one. Additionally, for the instruction to be more fruitful, teachers should be trained in strategy instruction and assessment.

Materials developers should also play a key role in designing and incorporating tasks and exercises into the reading materials that elicit a wide variety of reading strategies and by providing multiple practice opportunities so that students can employ strategies autonomously. It also seems imperative to take into account EFL readers' real preferences and differences as individuals in designing and developing reading materials that might influence their choice and use of metacognitive strategies.

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