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The relationship between metacognitive and self-regulated learning strategies with learners' L2 learning achievement

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Abstract

This study was an attempt to explore the extent to which second/foreign (L2) learners used metacognitive and self-regulated learning strategies. Additionally, it investigated the relationship of metacognitive and self-regulated learning strategies with L2 learners' language learning achievement. To these ends, 49 English as a foreign language (EFL) learners, including 8 male and 41 female EFL learners, from several language institutes participated in this study. To collect the data, Metacognitive Strategy Questionnaire by Item Type (MSQIT), Self-Regulated Learning Strategy Questionnaire (SRLSQ), and Final English Achievement Test were used. The data were analyzed descriptively and inferentially using Pearson product moment correlation procedures. The results revealed the high and medium use for metacognitive and self-regulated learning strategies, respectively, among Iranian intermediate-level EFL learners. Moreover, there was a positive relationship between metacognitive and self-regulated learning strategy use with L2 learning achievement. The findings can help L2 teachers in gaining better understanding of L2 students' weaknesses and strengths regarding metacognitive and self-regulated learning strategies and making modifications in their teaching methods to provide opportunities for their students to promote L2 learning achievement.

Keywords: metacognitive learning strategies; self-regulated learning strategies; learning achievement; L2 learners

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1. Introduction

There has a great shift in psychological basis of language learning from behaviorism to cognitivism since 1960s (Anderson, Reder, & Simon, 1995). Based on this shift, the roles of second/foreign (L2) learners in educational context have changed greatly. L2 learners are expected to get more active role than before and take more responsibilities in their learning process. Therefore, language learning strategies have gained more importance recently, particularly those learning strategies which assist L2 learners to be more active, independent and self-directed.

Learning strategies are defined as "the steps taken by learners to enhance their own learning" (Oxford, 1990, p.1). According to O'Malley and Chamot's (1990), learning strategies are "the special thoughts or behaviors that individuals use to help them comprehend, learn or retain new information" (p. 1). They can play a role in lightening the L2 teachers' burden and can help L2 learners manage their own process of learning (Cohen, 1998, p. 21).One group of strategies which may assist language learners to be more active and independent and influence learning achievement is metacognitive strategies; these strategies are "higher order executive skills that may entails planning for monitoring, or evaluating the success of learning activity" (O'Mally & Chamot 1990, p. 44). As Bandara (1991) states, the metacognitive strategies are a category of strategies consisting thinking about mental processes which accrue in learning process, monitoring learning while it is taking place and finally evaluating learning after it has accrued. Moreover, metacognitive strategies might be related to language learning since metacognition has two aspects: knowledge about the cognition and self-regulation of cognition. The first aspect deals with learners' knowledge about a task or variable and the second aspect deals with learners' monitoring, controlling and regulating their actual behavior (Baxter, 1999; Wolters & Pintrich, 1998).

Furthermore, self-regulated learning strategies may have some effects on language learning achievement since those who are considered as self-regulated learners are "metacognitively, motivationally, and behaviorally active participants in their own learning process" (Zimmerman, 2008, p. 4). In fact, self-regulated learning strategies are cognitive and metacognitive strategies which activate learners apply to efficiently control manage and enhance their own learning (Zimmerman & Martinez-Ponez, 1992). Self-regulated learning strategy use can help self-regulated learning i.e., an action which is self-initiated by language learners consisting goal setting and managing one's efforts toward learning goal, self-monitoring (Zimmerman & Risembery, 1997). Despite the new trend toward more communicative methods of L2 teaching, little emphasis has been placed on using metacognitive and self-regulated learning strategies in English as a foreign language (EFL) classes and their relationship with L2 learning achievement. Thus, it is worth conducting a study to see the extent to which Iranian EFL learners use metacognitive and self-regulated learning strategies and find out whether there is a relationship between metacognitive and self-regulated learning strategy use and their L2 i.e., English learning achievement. The results of such a study make EFL teachers and learners aware of the significance of such strategies and equip teachers with necessary skills to help EFL learners to be more independent whenever they encounter communication difficulties in the target language.

2. Literature Review

Over the last two decades, psychologists and scholars have considered metacognition as an important potential for explanations of the learning process (Hulstijn, 2003). According to Livingston (1997), metacognition can be viewed as the knowledge of field of cognition including all the mental activities linked with thinking, knowing, regulation, and remembering. It refers to more intensive thinking which includes active control over the cognitive processes exerted in learning. It is often recounted as "thinking and thinking", that is,

"the ability to reflect on what is known" (Anderson, 2008, p. 99).

As a crucial aspect of human experience, metacognition can be employed to assist language learners (Maki & Mcguire, 2002). As Joseph (2003) states, metacognition can increase learning by leading students' thinking, and encouraging them follow a sensible course of action as they think through a plight, deciding, or trying to understand a setting or task. "It produces the powerful knowledge that enable students to control their learning by demonstrating a conscious application of cognitive strategies" (p. 151). As Wenden (1998) states, it "increases learning results, making recall easier, … and it sets right the role of development in learning as well as the talent and speed of learners' cognitive engagement" (Wenden, 1998, p. 520).

Metacognition includes metacognitive knowledge and metacognitive experiences or regulation (Flavell, 1979). Metacognitive knowledge "consists primarily of knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises" (Flavell, 1979, p. 907); it is a prerequisite for self-regulation learning, and "informs planning decisions taken at the outset of learning and the monitoring processes that regulate the completion of a learning task" (Wenden, 1998, p. 528). Metacognitive experiences are "any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise" (Flavell, 1979, p. 908). Metacognitive experiences entail the application of metacognitive strategies, which take place "in situations that stimulate a lot of careful, highly conscious thinking" (Flavell, 1979, p. 908) or "when learning has not been correct or complete" (Wenden, 1998, p. 520).

Admittedly, metacognitive strategies are a pronounced trait of metacognitive experiences and are "general skills through which learners, manage, direct, regulate, guide their learning, i.e. planning, monitoring, and evaluating" (Wenden, 1998, p. 519). As Weinstein and Mayer (1986) state, metacognitively-grown learners think clearly about misconceptions and their errors as soon as lack of success takes place during the attainment of an activity. They are certain in their competences to learn; they do not waste time to get much help from peers and teachers. In fact, they pilot the learning process and scrutinize on each element of it. Such learners make an evaluation of why they are successful learners. What is more, they actively try to find to spread out their collection of learning strategies. These learners find themselves as invariable thinkers and can successfully deal with new circumstances. In other words, they are potentially successful in self-regulated learning.

Self-regulated learning is "an active constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000, p. 453). In a metacognitive sense, self-regulated learners plan, organize, self-instruct, self-monitor, and self-evaluate (Zimmerman, 1986). Thus, the importance of using self-regulated learning strategies has been highlighted by recent literature on language learning (e.g., Chung, 2008). Following Weinstein and Mayer's (1986) classification, self-regulated learning strategies can be classified into two main categories: cognitive and metacognitive learning strategies. Cognitive strategies refer to those ones which highly focus on information processing such as rehearsal, elaboration, and organization; metacognitive strategies are the employed behaviors that are displayed in learning situation (Pressley, Harris, & Marks, 1992).

Zimmerman and Martinez-Pons (1986, cited in Arjmand, 2012, pp. 22-23) have proposed a model for different kinds of self-regulated learning strategies that are used by students in their learning process. It includes:

- Self-evaluation: it indicates student-initiated evaluations of the quality or progress of their work;
- Organizing and transforming: it indicates student-initiated overt or covert rearrangement of instructional materials to improve learning;
- Goal-setting and planning: it indicates students' setting of educational goals or sub-goals, and planning for sequencing, timing and completing activities related to those goals;
- Seeking information: it indicates student-initiated efforts to secure further task information from nonsocial sources when undertaking an assignment;
- Keeping records and monitoring: it indicates student-initiated efforts to record events or results;
- Environmental structuring: it indicates student-initiated efforts to select or arrange the physical setting to

make learning easier, e.g., 'I isolate myself from anything that distracts me.'
- Self-consequenting: it indicates student arrangement or imagination of rewards or punishment for success or failure;
- Rehearsing and memorizing: it indicates student-initiated efforts to memories material by overt or convert practice;
- Seeking social assistance: it indicates student-initiated efforts to solicit help from peers, teachers, and adults;
- Reviewing records: it indicates student-initiated efforts to reread notes, test, or textbooks to prepare for class or further testing.

In sum, as Pintrich (2000) and Schraw, Crippent, and Hartley, (2006) describe, four types of processes are involved in self-regulation: 1) Cognition (simple problem solving strategies and critical thinking); 2) Metacognition (knowledge and control of cognitive skills); 3) Motivation (learners' interest level in learning a task and their beliefs in their capacity to do it); and 4) Content (learners' behaviors in learning conditions). Concerning metacognitive processes, self-regulated learners use various strategies such as planning, organizing, self-monitoring and self-evaluating during their language learning process which helps them be self-aware and knowledgeable in this process. Given the above issues, there seems to be a paucity of research on the use of metacognitive and self-regulated learning strategies among Iranian EFL learners, particularly at the intermediate-level of proficiency. In addition, little research has been done to investigate the relationship of metacognitive and self-regulated learning strategies with learners' L2 learning achievement in the context of Iran where English is used as a foreign language. Therefore, the following questions are addressed in this study:

- To what extent do Iranian intermediate-level EFL learners use metacognitive learning strategies?
- To what extent do Iranian intermediate-level EFL learners use self-regulated learning strategies?
- Is there any significant relationship between Iranian intermediate-level EFL learners' metacognitive and self-regulated learning strategies, on the one hand, and their L2 (English) learning achievement?

3. Methodology

3.1 Participants

The participants of the study included 49 (8 male and 41 female) Iranian EFL learners selected from 10 EFL classes at three English language institutes in Isfahan. They were native speakers of Persian and had no contact with an English-speaking community. The participants of the study who were in intermediate-level English courses were selected from a larger sample of 73 EFL learners through a placement test. They were studying English for several terms in the English institutes.

3.2 Instruments

To collect data, four instruments were used in this study: Oxford Placement Test, Metacognitive Strategy Questionnaire by Item Type (MSQIT), Self-Regulated Learning Strategy Questionnaire (SRLSQ), and Final English Achievement Test. Oxford Placement Test (OPT) was employed to select a homogenous group of EFL learners and in the intermediate level. OPT (2001), which was a reliable and valid test, contained 60 multiple-choice items of vocabulary, structures and cloze test items. The participants should answer the items in 30 minutes. MSQIT, which included 39 Likert-scale items questionnaire, was designed by Purpura (1999) based on the model of human information processing. The questionnaire was used to assess the EFL learners' metacognitive strategy use under three main categories: planning, monitoring, and evaluation. The questionnaire had a Likert-scale format with six alternatives from 'never' to 'always', so the data could be converted into numerical scale ranging from 0-5. The reliability and validity of the test was approved by Purpura (1999).

SRLSQ, which included 31 Likert-scale items questionnaire, was designed by Zimmerman and Martinez

(1988). The questionnaire was used to collect the data on the EFL learners' self-regulated learning strategy use. The questionnaire had a six-point Likert-scale format (with each item ranging from 'strongly disagree' to 'strongly agree'). The items of this questionnaire were categorized into two main parts: 1) Metacognitive Control Strategy and 2) Resource Management Strategies. The first part dealt with the strategies which made the learners able to control their own cognition, while the second part described the learners' regulatory strategies consisting time and study environment, effort regulation, help seeking, and peer learning that helped the learners control other resources beside cognition and help-seeking. This questionnaire consists of five subscales: Metacognitive Self-Regulation, Time and Study Environment, Effort Regulation, Help Seeking, and Peer Learning. The reliability and validity of the test was approved by Zimmerman and Martinez (1988). Also, Moeinikia and Abtin (2006) had reported a high level of reliability (alpha = .87) for this questionnaire using internal consistency method. Moreover, the content validity of questionnaire was approved by experts' judgments.

Final English Achievement Test included 100 items in different parts such as vocabulary, grammar, listening, and reading comprehension. The test was used to assess the participants' level of achievement in L2 i.e., English. The scores in this test ranged from 0-100; the higher score revealed the higher level of English achievement. The content validity of the test was approved by experts' judgments. Besides, the test had been piloted before by language testing experts in the institutes.

3.3 Procedure

First, the permission was taken from the heads of institutes to collect the required data from their students. Second, to select and place EFL learners, OPT was administered to 73 EFL learners randomly selected from the 10 intact classes in the three language institutes. Based on OPT scoring guideline, those EFL participants whose scores were from 30-47 were considered as intermediate-level learners. Therefore, 49 intermediate-level learners students were selected whose 8 of them were male and 41 of them were selected. Before administrating the questionnaires, the participants were informed of the purpose of the study. They also were assured that their responses were confidential and would not affect their course grades. Second, MSQIT and SRLSQ were administered to the participants. They were asked to indicate the degree of their agreement on each item of questionnaires by choosing one of the alternatives. The significance of providing honest responses was explained to them. Third, Final English Achievement Test was administered to the same participants at the end of the semester. Finally, the participants' scores were submitted to statistical analyses with SPSS (version 20) for Windows.

4. Results

The first research question of the study aimed to explore the extent to which Iranian intermediate-level EFL learners used metacognitive strategies. The descriptive statistics of metacognitive strategy scores i.e., mean and standard deviation were calculated for the whole metacognitive items and its three subscales (goal setting, planning, and assessment). As the number of items in the subscales was different, to report comparable statistics, each participant's raw score on MSQIT was divided by the total number of the items in the questionnaire and number of the items composing the subscale in the questionnaire, which resulted in a score on a scale of 0-5. The overall and subscale mean scores are reported on a scale of 0-5 in Table 1.

Table 1

Descriptive Statistics of Self-Regulated Learning Strategies

Subscale	No of items	Mean	Std. deviation
goal setting	5	3.72	0.74
planning	8	3.72	0.63
assessment	26	3.26	0.67
Total	39	3.42	0.58

As Table 1 shows, this overall mean score (3.42) was larger than the 2.5 i.e., possible median score on a

5-point scale. This number is between the fourth (i.e. *often*) and fifth (*usually*) options on 5-point Likert items ranging from never (0) to always (5). This result indicates that the EFL learners generally received relatively high scores on the metacognitive measure. In other words, this finding shows the high use of metacognitive strategies. Also, the EFL learners perceived themselves stronger at goal setting and planning strategies (M = 3.72). The assessment strategies were reported as the least frequently used strategies (M = 3.26).

The second question of the study aimed to explore the extent to which Iranian intermediate-level EFL learners used self-regulated learning strategies. The descriptive statistics of self-regulated learning strategy scores i.e., mean and standard deviation were calculated for the whole items and its five subscales (Metacognitive Self-Regulation, Time and Study Environment, Effort Regulation, Help Seeking, and Peer Learning). The overall and subscale mean scores are reported on a 6-point scale in Table 2.

Table 2

Descriptive Statistics of Self-Regulated Learning Strategies

Subscale	No of items	Mean	Std. deviation
Metacognitive Self-Regulation	12	3.97	.71
Time and Study Environment	8	4.10	.51
Effort Regulation	4	3.42	.71
Help Seeking	4	4.29	.87
Peer Learning	3	3.62	.97
Total	31	3.94	.51

As Table 2 shows, this overall mean score (3.94) was larger than the 3 i.e., possible median score on a 6-point scale. This number is between the third (i.e. *slightly disagree)* and fourth (*slightly agree*) options on 6-point Likert items ranging from *strongly disagree* (1) to *strongly disagree* (5). This result indicates that the EFL learners generally received scores slightly above average on the self-regulated learning strategy measure. In other words, this finding shows the medium use of self-regulated learning strategies. Also, the EFL learners perceived themselves stronger at 'help seeking' strategies (M = 4.29). The 'peer learning' strategies were reported as the least frequently used strategies. (M = 3.62).

To address the third research question, which intended to seek whether there was any significant relationship between Iranian intermediate-level EFL learners' metacognitive and self-regulated learning strategies, on the one hand, and their L2 (English) learning achievement, Pearson product moment correlation coefficients were obtained. The results are summarized in Table 3.

Table 3

Correlation Coefficients of Scores from Metacognitive and Self-Regulated Learning Strategy Measures with Final English Achievement Test

	Final English Achievement
Metacognitive Strategy	0.30 *
	.038
	N = 49
Self-Regulated Learning Strategy	.37**
	.008
	N = 49

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

As Table 3 reveals, a significant and positive correlation between the metacognitive strategy use and L2 (English) learning achievement was found (r = 0.30, *p = .038, N = 49). According to Table 3, the degree of correlation was low, but it was significant. In other words, there was a low positive correlation between the use of metacognitive learning strategies and English learning achievement. In addition, there was a significant and positive correlation between the self-regulated learning strategy use and L2 (English) learning achievement (r = 0.37, **p = .008, N = 49). The degree of correlation was higher regarding the self-regulated learning strategies,

but it was still low. In other words, there was a low positive correlation between the use of self-regulated learning strategies and English learning achievement.

5. Discussion

The first research question was aimed to find out the extent to which extent the EFL learners use metacognitive learning strategies. The analysis of the descriptive statistics showed that the EFL learners at the intermediate level made use of the metacognitive learning strategies more than the medium level, in general. The above result about the above-average use of metacognitive learning strategies can be explained by referring to some other research findings in the related literature on language learning strategies and learners' level of proficiency. Some studies (e.g., Chamot, O'Malley, Küpper, & Impink-Hernandez, 1989; Halbach, 2000; Oxford & Nyikos, 1989) have showed that there is a kind of relationship between language learners' proficiency level and the use of learning strategies. They have reported that the foreign language learners with advanced proficiency level tend to utilize very high use of learning strategies and those with low proficiency level tend to utilize very low use of learning strategies. The learners at the intermediate level come in between. Since the participants of this study were L2 learners at the intermediate level, it was not against expectation that they used the metacognitive strategies a little above the medium level. Moreover, the relatively high use of metacognitive learning strategies can be expected given new changes in L2 teaching methodology in Iran. In recent years, EFL teachers have tried to equip their learners with more strategies such as metacognitive ones to make them more responsible and independent.

Regarding three subscales of metacognitive strategies, the EFL participants appeared to use assessment processes slightly less than goal setting and planning processes. This may be due to dedicating time for learning English in Iran. Because English is learned/taught as a foreign language formally in language institutes and this happens during a limited period of time in the academic year, the EFL learners are pressed by the time. Also, the teachers do not have adequate time for using workbook activities and supplementary materials. Hence, they use goal setting and planning processes more than assessment ones.

The second research question was aimed to find out the extent to which extent the EFL learners use self-regulated learning strategies. The analysis of the descriptive statistics showed that the EFL learners at the intermediate level made use of the metacognitive learning strategies at the medium level, in general. The above result is almost positive. By changing the L2 methodology from grammar translation method toward a more communicative one, the roles of learners and teachers has changed as well. The focus moved from teachers to learners and the EFL classes have become more learner-centered (Bagheri & Aeen, 2011). Iranian EFL learners have to gain more responsibilities in their learning process now than before, leading to more sense of independency; they have to be more active and are not viewed as the containers that are filled by information (Fahim & Sheyk Bagheri, 2011). As a result, EFL learners have recently become more active, responsible, and self-regulated than before. The above results are in line with the findings of Zimmerman and Schunk's (2008) study, characterizing self-regulated learners as active learners that manage their own learning experiences in various ways. Addition only, in the present study, the intermediate-level EFL learners use self-regulated learning strategies almost at medium level, which find support from the previous research (e.g., Chamot et al., 1989; Halbach, 2000; Oxford & Nyikos, 1989) which reported that the level of proficiency was correlated with the level of using language learning strategies.

Furthermore, it was found that the EFL participants had low ability to control their effort and attention when there would face some difficulties, distractions or uninteresting tasks Therefore, a need to equip the EFL learners with some strategies on effort-regulation aspect of self-regulation is felt. However, the participants used the strategies related to 'help seeking' aspect of self-regulation at the highest level. They tried to ask the instructors and other peers for help when they could not understand the material. This can be beneficial for EFL learners to have a better learning achievement. Zimmerman (2008) argues that peer help and teacher assistance facilitate learners' language achievement.

The most important objective of this study was to find the relationship of metacognitive and self-regulated learning strategy use with the EFL learners' L2 achievement. The results revealed that there was a positive relationship between metacognitive strategy use and the EFL learners' L2 achievement. According to Mahadi and Subramaniam (2013), among various learning strategies, metacognition can be considered as a strong predictor of students' success. It can distinguish successful learners from less successful ones; it improves language learners' motivation, tolerance, persistence, participation, curiosity, confidence, and their self-esteem. Also, Flavell (1979) states that metacognitive knowledge plays an essential role in cognitive activities concerning language use. Consequently, higher use of metacognitive learning strategies can result in more positive outcome in learning process.

The results of the study also revealed a positive relationship between self-regulated learning strategy use and the participants' English achievement. The results indicate that the intermediate-level EFL learners who had a higher level of self-regulated learning strategy use received better scores in their final English achievement test. In other words, the higher level of using self-regulated learning strategies among EFL learners may lead to better L2 learning achievement. Research also supports a positive effect of self-regulated learning strategy use on learners' academic achievement (Dckeyrel et al., 2000). Zimmerman and Martinez-Pones's (1998) study supports the relationship between the use of self-regulated learning strategies and academic achievement. Mason (2004) also claims that training programs which lead to developing self-regulated learning are beneficial for learners' learning. Those learners who are able to employ more self-regulated learning strategies have the ability to direct their learning experience more actively in various ways.

6. Conclusion and Implications

This study explored the extent to which Iranian L2 learners use metacognitive and self-regulated learning strategies. Additionally, it investigated the relationship of metacognitive and self-regulated learning strategies with L2 learners' language learning achievement. The findings indicate that the Iranian intermediate-level EFL participants used metacognitive learning strategies at a relatively high level. Moreover, they perceived themselves higher at 'goal setting' and 'planning' metacognitive strategies than 'assessment' metacognitive strategies. Also, the results on the self-regulated learning strategy use indicated that the EFL participants in the current study used this group of strategies at the medium level. They perceived themselves stronger at 'help seeking' strategies and weaker at 'peer learning' self-regulated learning strategies. Thus, to make EFL learners more effective users of the target language, Iranian EFL teachers should equip their learners with assessment and peer learning strategies, and invest more time on them. The findings of the current study encourage L2 teachers to pay closer attention to various metacognitive and self-regulated learning strategies.

Furthermore, the result of correlational analysis indicated that there was a low, but significant, positive correlation between the metacognitive strategy use and the EFL participants' English achievement. This correlation was positive and significant for self-regulated learning strategy use and the EFL participants' English achievement, too. The above-mentioned results imply that metacognitive and self-regulated learning strategies can be important factors in L2 learning and contribute to L2 achievement. Thus, L2 teachers should apply some suitable learning instructions and tasks to make their learners more familiar with metacognitive and self-regulated learning strategies and increase their implementation among L2 learners. As Latifi, Tavakoli, and Dabaghi (2014) suggest, teachers are expected to use a metacognitive approach to improve L2 skills. Materials developers and syllabus designers should also develop activities to help L2 learners make maximum use of metacognitive and self-regulated learning strategies. This way, L2 learners can be enriched with sufficient learning strategies and be more successful in L2 learning than before.

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