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The Cyclical Model of Self-Regulated Learning and Metacognitive Awareness of Iranian EFL Learners' Grammar Strategies

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Abstract

An awareness of one's own learning processes seems not to occur without language learners' engagement in SRL strategies in terms of behavioral, emotional, cognitive, metacognitive, and environmental aspects during learning procedures, which leads to high-quality planning for learning (Krause & Coates, 2008). This mixed method study was conducted to explore the effectiveness of self-regulated language learning in developing metacognitive awareness of grammar strategies and compared it with non-self-regulated groups. To this end, a total of 122 homogenized intermediate EFL learners were randomly allocated to one of three groups (two experimental and one control). To collect data, all groups were subjected to three different treatments. The data analysis of non-parametric Kruskal-Wallis indicated that self-regulated language learning strategies instruction (cyclical & emotional regulation) had a significant effect on the EFL participants' metacognitive awareness of grammar strategies. Also, the SRL (C & ER) model improved the learners' metacognitive awareness more than the SRL (C) model and was followed by F on F method, which showed the lowest performance. For more evidence of learners' engagement in SRL strategies during the learning process, an SRGL questionnaire was administered to EFL learners at the pre-test and post-test phases. A paired sample t-test data analysis revealed that the participants in both SRL models outperformed in the use of self-regulatory strategies. The result of the paired t-test of emotion regulation data also represented a large effect size. Regarding learners' attitudes towards implementing SRL models, the frequency data and chi-square analysis of both experimental groups indicated that most students significantly held a positive perception of these techniques. Therefore, this study provides implications for teachers and syllabus designers to design SRL task modeling compatible with learners' language levels.

Keywords: emotion regulation, metacognitive awareness, SRL strategies behavioral, emotional

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Introduction

In the domain of S / F language learning, metacognitive awareness could be evolved through active engagement of learners in language strategy use during learning procedures within appropriate designed tasks (Duell, 1986; Flavell & Wellman, 1977). Indeed, active engagement appears to be better realized through the use of language strategies and regulation in terms of behavioral, emotional, cognitive, metacognitive, and environmental dimensions, accumulation of all of which can be manifested in a key term of self-regulated learning. In essence, self-regulated learning procedures reinforce metacognitive awareness of strategy use of language structures in a way that provides learners with opportunities, such as setting goals, cognitive and metacognitive learning activities, emotional, and environmental aspects, to revise or refine their own learning behaviors (Zimmerman, 2000, 1998). It is worth mentioning here that this kind of learning procedure seems to be reciprocal, which could cultivate both the independent and dependent variables of this study.

Indeed, there is a bilateral link between self-regulated learning and metacognitive awareness, such that due to its impact on both planning and monitoring, metacognitive awareness is necessary for learners to practice self-regulated learning (Gitomer & Glaser, 1987; Paris & Paris, 2001; Wenden, 1998). As claimed by information processing theories, "self-regulation reflects metacognitive awareness" (Schunk, 1991, p. 448). In other words, learners' engagement in self-regulated strategies within tasks paves the way for learners' attention to their learning procedures and perceiving their strengths and weaknesses in order to evaluate their learning process, which leads to a better focus on the form of language.

However, the extent to which learners participate in and benefit from a form-focused approach is determined by their L2 proficiency (Ellis, 2016; Williams, 2001). Indeed, the focus on form method does not ensure complete engagement of learners in the learning process due to individual differences in language learning strategy awareness, knowledge, and use. The main problem is that learners do not have enough information about self-regulated strategies, such as self-monitoring and self-evaluation, in order to evaluate their strengths or weaknesses and to apply strategies that are tailored to the nature of the task or are not motivated to participate in learning tasks.

Indeed, SRL develops a more autonomous learner who is equipped with strategic language knowledge and engages in self-directed learning, which includes self-evaluating and self-monitoring as a preliminary requirement for metacognitive awareness development (Zimmerman et al., 1996). As a result, language acquisition becomes more efficient and adaptable (Coates, 2005). Thus, this study will offer a different method of monitoring and evaluating the learning process, in which there has been an attempt to increase learners' metacognitive awareness of grammar strategies, which goes beyond the common practice in a learner-centered approach. Self-regulated learning can offer a new prospect for self-monitoring and self-

evaluating the learner as an independent language learner. So, cultivating learners' awareness of strategies is one of the key aims of this study.

To achieve this goal, learners should be exposed to both knowledge and essential abilities and then put them into action while learning target knowledge and skills, which are prerequisites for becoming skilled lifelong learners. In addition to being aware of and using learning strategies, self-regulated learning requires a lot of reflection and self-awareness (Kobayashi & Lockee, 2008).

As a result, the significance of this study is emphasized by the fact that it investigates metacognitive awareness of grammar strategies more in terms of the SRL process than the product (Dornyei, 2014), by involving learners in their own learning process on behavioral, emotional, cognitive, and metacognitive dimensions. Thus, the interactive procedure of self-regulated language learning strategies leads to the learners' self-awareness, strategy use during the learning process, and behavior, which could eventually be tangible in language acquisition through form, meaning, strategy use, and emotion control in a supportive context. To this end, the present study attempts to investigate the impact of cyclical self-regulated strategies instruction, in addition to emotion regulation, on the metacognitive awareness of grammar strategies of EFL learners.

Purpose of the Study

The purpose of this study was to examine the influence of SRL-based F on F on EFL learners' metacognitive awareness of grammar strategies. Indeed, this research focuses on how learners' engagement in strategy use and regulation within learning tasks increases EFL learners' metacognitive awareness. In other words, it explores the effect of language learning processing in terms of strategy use and regulation concerning behavior, (Meta) cognitive, emotion, context, monitoring, and evaluation on the metacognitive awareness of grammar strategies of EFL learners (Pintrich, 2000).

RQ1: Is there any statistically significant difference among SRL(C&ER) G, SRL(C) G, and F on F G in terms of metacognitive awareness?

RQ2: Does self-regulated language learning strategies instruction in both groups SRL(C&ER) and SRL(C) have statistically significant effect on EFL students' SRL?

RQ3: Does Emotion Regulation strategy instruction have statistically significant effect on EFL students' ER?

RQ4: Do EFL learners in self-regulated learning groups develop positive attitude towards the SRL (C &ER) and SRL (C) models?

RQ5: What is EFL learners' perception towards the SRL (C&ER) and SRL (C) models?

Design of the Study

The design of the study is quasi-experimental, using a mixed method. The researchers aimed to investigate the effect of SRL models in addition to emotion

regulation and non-self-regulated learning (Focus on Form) as independent variables on the dependent variable, metacognitive awareness. Indeed, this study applied qualitative and quantitative measurement of SRL strategy instruction and metacognitive awareness of grammar strategy, and examined emotion regulation of learners and learners' attitudes towards the SRL-F on F models used.

Literature Review

This study focuses on examining the impact of SRL-based Focus on Form models on the metacognitive awareness of grammar strategies of EFL learners. Therefore, attempts are made to review the literature review.

Theoretical Framework

Self-Regulation Learning

SRL was defined as an individual, cognitive-constructive activity that involves the interaction of constructs such as cognitive strategies, metacognition, and motivation (Zimmerman, 1989). Zimmerman (1986) defined SRL as the methods by which learners systematically activate and sustain their cognitions, motivations, behaviors, and affects toward the accomplishment of their goals. Self-regulated learners take charge of their own learning, analyze tasks, set realistic learning objectives, modify their learning strategies, and continuously assess their own development (Winne & Hadwin, 1998). Regarding strategy use from the SRL perspective, it offers students new strategies for monitoring and controlling their development towards their learning aims (Zimmerman, 1998).

In this regard, Hadwin and Winne (1996) proposed strategic learners as students have knowledge of alternative strategies that are capable of applying them on an appropriate occasion and also know the merits and demerits of the selected strategy in relation to the task. So, strategy use is also controllable and teachable (Pressley et al., 1987). In this regard, it has been reminded that learners do not have to use strategies automatically, but they should be trained how to do so (Perry, 1998; Zimmerman, 2000). According to all self-regulation learning theories, students who self-regulate their learning are involved actively and constructively in a process of meaning-making, and they alter their thoughts, feelings, and behaviors as a necessity to impact their learning and motivation (Kovacs, 2012).

According to Corno (1989), self-regulated learners design their own learning process, set their own goals, organize their own learning assignments, closely watch themselves while learning, and continuously evaluate their own learning process. These actions have come to be known as "metacognition" (Pressley et al., 1987). Self-regulated learning necessitates a high level of motivation in addition to metacognition. A motivated learner is a self-starter in the learning process. Motivated learners put in exceptional effort, persistence, and perseverance during the learning process (Schunk, 1982).

Self-Regulated Language Learning Strategies

Zimmerman (1989) paved the way for educators to differentiate between self-regulated learning strategies and self-regulated learning processes. In this regard,

cognitive, metacognitive, motivational, and behavioral processes are included in self-regulated learning processes. In return, performances and processes that activate the learning of language skills are called self-regulation learning strategies. Awareness of self-efficacy is a kind of self-regulated process, while goal setting is a sample of self-regulated learning strategies (Pintrich & De Greot, 1990). Researchers have proposed different strategies or instructional models to adjust motivation, cognition, and behaviors (Zimmerman & Martinez-Pons, 1990). It is worth mentioning that all phases of self-regulated learning are affected by students' motivational beliefs. So, it is recommended to teach students to use self-regulatory skills along with creating a classroom context in which their motivation is increased by using these strategies (Kobayashi & Lockee, 2008).

Self-regulated learning strategies are classified into three aspects; the first factor to consider is motivating strategies. These tactics boost and maintain their drive to complete academic activities. Self-consequating, interest stimulation, and self-talk are significant in this practice. Self-consequating entails giving oneself an extrinsic reward as a result of accomplishing something (Zimmerman & Martinez-pons, 1990). Students' attention is increased by modifying things in order to make them more intriguing and demanding. Self-talk in the motivational category emphasizes verbal self-management to encourage pupils to focus on a reason for completing a task in order to stay motivated (Wolters, 2010).

The second part of strategies is cognitive strategies, which include learning tactics such as rehearsal, imagery, and elaboration, as well as transformation or organizing of learning information to improve memory (Garcia & Pintrich, 1994). In this aspect, the rehearsal method assists students in keeping material in their working memory. Imagery is concerned with mental imagery that students use to enhance their recall. Then, they elaborate by comparing a new notion to an old one they have already studied (Kihlstrom, 2014).

Finally, there are metacognitive methods, which include planning, monitoring, and regulating. Task analysis and goal setting are the most important components of planning strategies that assist students in planning their cognitive strategy use and manipulating information, as well as activating old knowledge in relation to the task (Lai, 2011).

Self-Regulated Learning Models

In terms of the construction of cognitive (meta) regulation, including the information processing model (Winne & Hadwin, 1998), the general model (Pintrich, 2000), and the cyclical model (Zimmerman, 2000), the cyclical SRL model (Zimmerman, 2000), in addition to emotion regulation, were applied in this study.

The Cyclical Model of Self-Regulated Learning

The socio-cognitive theory of Bandura (1989) is the foundation for the cyclical SRL model, which includes three-part congruence between covert non-public, overt behavioral, and environmental elements, which can be thought of as autonomous yet interdependent in shaping the student's learning. The actual SRL

model is divided into three cyclical phases: planning, overall performance, and self-reaction levels.

The Forethought Phase

One full cycle of self-regulation is completed when the forethought component directly affects the overall performance phase, which then determines the responses that appear in the self-mirrored image phase and feeds back into the forethought phase. Task-driven tactical planning and the activation of various motivational beliefs are two additives that are present in this section at the same time. As a result, task analysis is the first stage of the self-regulation cycle (Zimmerman & Moylan, 2009). In terms of the impact of influential variables on self-motivation, self-efficacy, outcome expectations, task value, interest, and goal orientation, students are energized and directed toward task completion (Pintrich & De Groot, 1990; Renninger & Hidi, 2011; Wigfield et al., 2008).

The Performance Phase

Self-observation and self-control are the two most crucial methods throughout the execution phase (Zimmerman & Moylan, 2009). During performance, self-observation, self-monitoring, or self-supervision of the learning process occurs as a self-assessment (Panadero & Alonso Tapia, 2013; Winne & Hadwin, 1998). The activation of interest incentives, inducements, and self-consequences is yet another facet of self-control (Corno, 2001; Wolters, 2003; Zimmerman & Martinez-Pons, 1990). In sum, task strategies, self-instruction, visualization, time management, environmental structuring, and help-seeking are all metacognitive dimensions of performance (Schunk, 1982; Zimmerman et al., 1996; Zimmerman, 2011).

The Self-Reflection Phase

In the self-reaction phase, learners respond to their earlier performance by attributing, self-evaluating, and feeling satisfied with themselves. During this phase, students actively judge their own performance while also defending it by articulating the reason for their outcome (Bandura, 1991; Pardo & Atono-Tapia, 1992). At this point, students evaluate their performance and investigate and defend the reasons for their outcomes. As a result of this process, they may experience positive or negative emotions, which will undoubtedly affect their motivation and learning regulation. In this regard, self-judgment and self-reaction, which have a mutual influence on each other, are active during the self-reflection phase (Bandura, 1991). Self-regulation is cyclical in this way because students' future performance is influenced by their past behavior (Zimmerman, 2011).

Metacognition Awareness

The term "metacognition" refers to a collection of cognizant mental processes that humans can use to regulate their cognition, evaluate their learning, and organize their tasks as they learn (Garrison, 1997; Oxford, 1990). An awareness of one's own cognitive processes is defined as metacognitive awareness, which enables individuals to keep track of and regulate their learning processes through the use of activities like cognition regulation, learning process evaluation, and task planning

(Bandura, 1997; Flavell, 1985; Garrison, 1997; Oxford, 1990). Increasing metacognitive awareness is a crucial aspect of assisting learners in becoming more productive and, more significantly, independent. If learners are aware of how they learn, they can identify the most successful methods.

Metacognitive Awareness and Self-Regulated Learning

The initial premise was that learners' skills and attitudes influence language learning in L2 learning. In this sense, Bandura (1997) believes that inadequacies in mental abilities frequently result from inadequate use of cognitive and metacognitive abilities rather than a lack of information. Indeed, there is a relation between learners' metacognitive awareness, strategy utilization, and performance (Schraw & Dennison, 1994). As a result, successful second language learners may be upbeat and confident in their use of a range of language learning skills and methods that play a part in language learning and instruction.

Thus, metacognitive awareness refers to the ability to consider, comprehend, and coordinate one's learning (Schraw & Dennison, 1994). In other words, metacognitive knowledge in second language acquisition refers to learners' perceptions of themselves, the factors that impact learning, as well as language learning and language instruction (Victori & Lockhart, 1995). Language learning, memory, communication (oral and written), comprehension, and problem-solving all rely on awareness (Flavell, 1985).

The pursuit of a viewpoint on the issue was launched by the well-researched metacognitive literature, which is grounded in both developmental psychology and cognitive psychology (Kluwe, 1987). Metacognitive awareness has been broadly defined as cognition about one's own cognition, or as an awareness of one's own cognitive processes that enables individuals to keep track of and regulate their learning processes through the use of activities like cognition regulation, learning process evaluation, and task planning (Bandura, 1997; Flavell, 1985; Garrison, 1997; Oxford, 1990).

In other words, when students participate in a process of reflection, comprehension, and control over their learning, this form of awareness has been understood as their intentional involvement in their learning process (Brookfield, 1985; Schraw & Dennison, 1994; Victori & Lockhart, 1995). This type of intervention may be more visible in expert learners (Rivers, 2001).

According to information processing theories, metacognitive awareness is a reflection of self-regulation. Understanding task requirements, personal traits, and task completion strategies are prerequisites for self-regulation in learners. Procedural knowledge is also a part of metacognitive awareness. On the other hand, the use of metacognitive strategies like planning, monitoring, and assessment is referred to as "self-regulation" in the study of cognitive psychology. (Wenden, 1998). Indeed, self-regulated learning and metacognitive awareness have a reciprocal relationship, with metacognitive awareness being necessary for learners to self-regulate their learning due to its influence on both planning and monitoring (Gitomer & Glaser, 1987; Paris & Paris, 2001; Wenden, 1998). In sum, self-regulated learning and metacognitive

awareness appear to be dynamic systems that complement each other in the evolution of learners' self-directed learning. Personal, behavioral, and environmental factors all interact in such a cycle (Teng & Zhang, 2016).

Empirical Evidence

Previous Research Findings of SRL and Metacognitive Awareness

Self-regulated learning is now an essential aspect of research, and there has not been much research to look into the influence of self-regulated learning on metacognitive awareness of language skill strategy. The current study appears to be one of the first attempts to develop a mixed method framework for detecting the effect of SRL on metacognitive awareness of grammar strategies.

Maftoon and Tasnimi (2014) compared the syntactic comprehension, vocabulary breadth, and metacognitive awareness of the reading strategies of self-regulated versus non-self-regulated readers. The experimental group received direct training and task-based instruction on reading self-regulation over the course of ten sessions. In order to generate the tasks / activities, Zimmerman's self-regulation methodology was used (1989). The results showed that self-regulation significantly impacted Iranian EFL students' comprehension of reading and metacognitive awareness.

Rahimi and Abedi (2015) investigated the connection between metacognitive awareness of listening methods and listening proficiency in language learners with varying degrees of academic self-regulation (low, mid, and high). The preliminary English test, the metacognitive awareness listening questionnaire, and the academic self-regulation questionnaire were utilized to collect data. The study's findings refuted the major hypothesis that the largest link between metacognitive awareness and listening comprehension exists among highly self-regulated pupils. The regression analysis revealed that the metacognitive awareness power value to predict listening proficiency was only obtained when the mid-self-regulated students were included in the analysis. Furthermore, it was discovered that the association between metacognitive awareness of listening methods and listening competency was not significant among poor self-regulated learners.

Yeschenko (2017) used scaffolded goal setting and reflecting activities to study how metacognitive awareness evolves over the course of a semester. It investigated the kinds of goals that students set for a specific learning task as well as their ability to employ reflective practice in their own learning and teaching strategies. This study's data was gathered using a mixed methods approach, with quantitative data from rubrics and an inventory and qualitative data from teacher journaling. According to quantitative data, students improved in various elements of goal planning, all measurable components of reflective practice, and metacognitive awareness.

Regarding the role of SRL on metacognitive awareness, the impact of a self-regulated learning technique on listening achievement and metacognitive awareness was investigated by Zeng and Goh (2018). Four college EFL students were subjected to self-regulated learning (SRL) for six months in order to strengthen their

listening abilities in a variety of situations. The metacognitive awareness of four listeners, on the other hand, was tested after they were treated with self-regulating strategies. As a result, during each level of SRL, the groups' metacognitive awareness differed significantly.

Bursali and Öz (2018) examined the role of various types of goal setting as a self-regulatory strategy on the participants' metacognitive awareness. The study included 118 university students enrolled in an English Language Teaching program. The Metacognitive Awareness Inventory (MAI) and the Goals Inventory were used to collect data. Descriptive statistics revealed that 48.3% of participants had higher metacognitive awareness, 28% had moderate metacognitive awareness, and 23.7% had low metacognitive awareness. Furthermore, a significant correlation was discovered between mastery goals and metacognitive awareness.

The relationship between EFL learners' knowledge of metacognitive strategies, self-regulation, and reading proficiency was examined by Amini et al. (2020). It has been established that metacognitive strategy awareness and self-regulation have a positive impact on second language reading proficiency. The global, problem-solving, support, and self-regulation types of metacognitive reading strategies were employed in this work to define reading competency, and the causal relationships between them were identified and tested using structural equation modeling. A positive association was found when the proposed model was tested against several fitness criteria, supporting the causal relationships between the variables.

The theoretical aspects of higher education students' metacognitive awareness and academic self-regulation were examined by Balashov et al. (2021). Metacognitive awareness, a metacognitive personality trait, has been found to influence not only the structure of mental and behavioral processes but also the academic achievement of the student. The findings of empirical research using the Questionnaire "Academic Self-Regulation," the Questionnaire "Metacognitive Awareness Inventory" and "Metacognitive Awareness," and correlation analysis using the Pearson's and Spearmen's rank correlation coefficients, showed that students with a higher level of metacognitive awareness (involvement in activities) are more independent in their self-regulated learning activities, gaining metacognitive abilities such as metacognitive knowledge, metacognitive monitoring, meta-memory, and meta-thinking. The conclusion suggested that dependent types of self-regulation have dominated the learning habits of contemporary student youth.

Instilling a higher level of metacognitive awareness in the context of academic writing learning scope, according to Wijaya (2022), is a crucial issue for globalized ELT educationalists because learners may control their learning goals, behavior, motivation, and effort for a better purpose. This current qualitative study, in particular, aimed to further investigate English Education Master Students' metacognitive awareness in academic writing learning enterprises with the assistance of 10 narrative written interview inquiries asking about the significance of metacognitive awareness in their academic writing learning activities. Based on the

findings, these two participants agreed that increasing their metacognitive awareness gradually converted them into more persistent and goal-oriented academic writers.

In the current study, in a metacognitive process-oriented writing lesson, Sumarno et al. (2022) assessed the impact of knowledge and cognition control on the students' writing abilities. They also considered the direction and strength of the association. They gave the students a writing rubric to evaluate their academic writing abilities and the Metacognitive Awareness Inventory to gauge their metacognitive awareness. The Pearson Association test and the Multiple Regression test were used in quantitative analysis to determine the strength and direction of the correlation. The findings revealed a substantial and unidirectional relationship between metacognition and writing abilities. Furthermore, it was discovered that knowledge about cognition and cognition regulation affect English writing skills with an influence level of up to 41.7%, and each variable of the two parameters had a significant influence on English writing skills with an influence level of up to 82.2%. This finding implies that it is critical to stimulate students' awareness of their thinking processes, or metacognition, during the writing process.

However, previous studies have provided evidence about the positive relationship between the use of self-regulated learning and metacognitive awareness in language learning skills, but the effect of SRL strategy use on the metacognitive awareness of grammar strategies and language form is less evidenced. Also, emotion regulation strategy use has been a missing practical part in most SRL models (Panadero, 2017). Indeed, the innovative nature of this study in the instructional context accentuates a model of SRL-based F on F that is amplified by emotion regulation, quantitative and qualitative measurement of SRL strategy instruction and practices, input and output-oriented F on F tasks, and applying the affective freedom technique in the class, in which there has been an attempt to increase the metacognitive awareness that leads to the high quality planning of learning, acquisition, and use of language structures more effectively.

Method

To achieve the study's goal, the researcher aimed to provide more opportunities for metacognitive awareness of grammar strategies through SRL in addition to emotion regulation.

Participants

This study used a non-probability sampling method with a convenience selection. The participants in this study were selected out of a pool of 147 college students (Persian native speakers) at the Qazvin Islamic Azad University on the basis of their performance on the OPT (Oxford Placement Test) in order to determine their level of English language competency. Based on the results, 122 female and male Iranian college students (engineering major) with scores above and below 1 SD (mean = 68.03, SD = 11.58) were included in the study. The subjects were at the intermediate level and randomly assigned to the three groups (six classes), which were exposed to self-regulated and non-self-regulated instruction for 18 sessions (36 hours) over 9 weeks.

Materials and Instruments

The following were the instruments used in the current study:

Oxford Placement Test (OPT)

The OPT test (2010) was utilized to determine placement. It is, in fact, used to assess participant homogeneity and language proficiency. Structure and vocabulary sections were used in this study to attain the study's purpose. The test had 120 questions and took 40 minutes to complete.

MCAI (Metacognition Awareness) Questionnaire

The Schraw and Dennison (1994) Metacognitive Awareness Inventory is used to assess metacognitive awareness (MCAI). The MCAI assesses a number of cognition-related subcategories. The MAI measures a series of subclasses of knowledge about cognition and regulation of cognition. Participants are asked to rate each of the 52 statements about them on a 5-point Likert scale as either true or false. The MCAI inventory has been translated into Persian to ensure that learners comprehend it. The MCA Q had a Cronbach's alpha reliability index of .991 and the two factors were inter-correlated (r = .54).

The SRLG Questionnaire

The SRLG Questionnaire is based on Zimmerman's cyclical self-regulated learning model (1989), an SRL scale for general learning mainly based on Toering et al.'s (2012), which was tested and verified by modifying words associated with EFL language learning (Tsuchiya, 2019). One signifies "strongly disagree," and seven represents "strongly agree" on a seven-point Likert scale. Planning, self-efficacy, self-monitoring, assessment, reflection, and effort were all covered in this questionnaire. For the forethought and performance phases, 18 question items were arranged, and 13 items for the self-reflection phase. Each stage of forethought, performance, and self-reflection was expected to have three components: motivation, effort, and self-efficacy, which this study likewise used. Nearly all of the factors in each construct enjoyed validity higher than .60. This questionnaire had a Cronbach's alpha of 0.790, indicating that the scale was reliable.

Emotion Regulation Questionnaire

Ten items make up the self-reported Emotion Control Questionnaire (ERQ), which is based on Gross's (1998) concept of the emotion regulation process, which indicates that the criterion validity of the ERQ is good (e.g., $r = 0.17 \sim 0.41$, all ps < 0.01). The emotion control strategies are categorized by Gross's (1998) emotion regulation process model. Depending on how early they are triggered during the emotion-producing process, with the premise that different control mechanisms may provide different consequences. The ERQ is intended to assess how effectively people use two regulation strategies: a tactic for assertiveness called cognitive reappraisal, which consists of six items (e.g., "When I'm in a tense situation, I make myself think about it in a way that keeps me calm") and expressive suppression, a coping mechanism (4 items, such as "When I'm in a tough circumstance, I try not to express how I feel") (Gross & John, 2003). These two regulation strategies have

their own scale scores. Each item is scored from 1 to 7 on the Likert scale, with higher scores indicating greater use of that strategy. This questionnaire's Cronbach's alpha for cognitive reappraisal and expressive suppression was 0.771 and 0.793, respectively. The total Cronbach's alpha for this questionnaire was 0.815, indicating that the scale was reliable.

Learners' Attitude Questionnaire

A questionnaire was used to assess the participants' perceptions of the educational treatment's effectiveness. Indeed, the questions were designed to tap into the key features of the SRL-FonF implementation, such as the following examples: I work on all areas of grammatical structure, form, meaning, and use. And then, it was submitted to several EFL experts' adjustments in order to ensure content validity. It also enjoyed the convergent validity of .757, and.768 for each factor, respectively. Cronbach's alpha for this questionnaire was 0.936, indicating that the scale was reliable.

Procedure

The current research was conducted in two independent phases; a pilot study and the main study. The approach followed to execute this study is outlined as pre-instruction, instruction, and post-instruction.

Pilot Study

A pilot study was carried out to evaluate research instruments prior to the main investigation. In the pilot study, the SRL (cyclical & ER) was used on a sample of 25 college students who were similar to the main population in terms of general language proficiency level based on pretest scores and the same teaching and learning procedures and resources. The goal of the pilot study was to look at the SRL models of instruction and test characteristics in order to prevent problems with test administration for the participants.

Pre-Treatment

ER Q was distributed among SRL (C & ER) learners during a scene-setting session, and SRL (C & ER) learners were asked about their learning challenges in terms of cognitive and psychological barriers to language learning. Each learner had his or her own folder. The handout was provided at a session before the start of treatment, and affective freedom techniques (mindfulness and AF) were practiced. Furthermore, SRLGQ (Persian translated) questionnaires were completed by language learners in the experimental groups in order to measure the level of acquaintance with self-regulated learning strategies prior to instruction. The instructor discussed the technique for completing assignments in each group throughout this session.

Treatment

Initially, the learners in the two experimental SRL groups were taught self-regulatory procedures from two models, including the cyclical model, as well as emotional regulation and the cyclical model. Participants were also exposed to

production tests, which included both controlled and free-writing assignments. Before beginning their treatment, the learners were given productive pre-tests and the SRLG Questionnaire. Indeed, the pre-test and post-test were spaced by nine weeks. In the first step, the use of self-regulation strategies was described.

The model of designed assignments was supplied to the students by the teacher. SRL students (C & ER) participated in regulation strategy use and emotion management. In 18 sessions, self-regulated learners from two groups were taught SRL strategies (8 dimensions), who practiced them. To begin developing self-regulated learning strategies in the classroom, the instructor teaches self-regulated learning strategies by showing how to implement these strategies and giving the proper amount of scaffolding during practice. The learners were exposed to goal-setting, planning, self-monitoring, attention, controlling, flexible use of learning strategies, appropriate help-seeking, and self-evaluation processes in a way that required them to specify their own learning goals, plan the processes ahead of time, motivate themselves, and focus their attention on learning strategies in task use that help learners with a better understanding of tasks and self-monitoring. In other words, learners participated in input-and output-oriented tasks, as well as SRL strategies, during each session.

Indeed, learners were exposed to textual as well as visual data, which consisted of daily life subjects as an input flooding selected from the Developing Grammar in Context Book for Intermediate Learners (Nettle & Hopkins, 2003), which enriched learners with specific grammatical structures for each session, in order to prepare them for oral conversation and written exercises as language production. They draw learners' attention to certain linguistic components during speaking and writing (VanPatten, 1996). Meanwhile, learners engaged in text summarization, repetition of new words, phrases, and structures with their partners in each circle of four members, and then individually and collectively responded to the teacher's questions in order to practice language structures in conversation.

Following that, students were asked to rewrite the sample paragraph using the same grammatical structures. Throughout the assignments, the teacher gave modeling, a garden path, and clarification to the students. After each class session, students were asked to send their thoughts on the SRL tactics used in that session via a virtual network. As a result, they direct learners' attention to their methods and learning procedures in order to record their techniques at the end of the activity (VanPatten, 1996). Indeed, applying diary studies to investigate L2 instruction and learning can potentiate the metacognitive awareness of language learners (Mckay, 2006).

The Focus on Form group as a control group was subjected just to the same designed tasks that are shared in all groups. In this regard, the experimental groups were subjected to the direct teaching of self-regulation strategies (eight dimensions) for 9 sessions, and then learners were asked to engage in the designed task in accordance with the nature of the language component (grammatical structure) as an end-product of learning.

Post-Treatment

In the final session of the class, the MCA questionnaire was given to the learners in order to measure the students' metacognitive awareness of grammar strategies. And then, an SRLG questionnaire was distributed among learners to determine the learners' involvement in self-regulated strategy use after the treatment. And then, an ER Q was administered to the first group. Finally, a questionnaire was developed by the instructor and was applied to elicit the learners' attitudes towards the integrated method of instruction in the class. Furthermore, SRL learners were given open-ended questions.

Data Analysis

This study is a mixed-method research with an embedded design using quantitative and qualitative data collection and analysis to investigate the impact of the SRLL models and F on F method as independent variables on the dependent variable, the metacognitive awareness of grammar strategies of EFL intermediate Iranian learners. Acquired data through quantitative sources such as the MCAQ (Questionnaire of participants, metacognitive awareness of grammar strategies) was analyzed through non-parametric Kruskal-Wallis to compare the three groups' median scores on metacognitive awareness. The data from SRLQ was submitted to data analysis (paired sample t-test), and the data obtained from the ER of learners, a paired sample t-test was applied. The data from the participants' perceptions about the efficiency of the SRL instruction was collected through LAQ and analyzed through Chi-square on the frequencies of the answers given to the questionnaire. And qualitative data was collected through open-ended questions and the students' diaries sent after each session of the class.

Results

Research Question One

Since the assumption of normality was not maintained on metacognitive awareness (Table 1), a non-parametric Kruskal-Wallis test was applied to compare the three groups' median (Mdn) metacognitive awareness scores in order to investigate the study topic. As shown in Table 1, the SRL (C & E) group's skewness and kurtosis values, -2.22 and 5.10, were more than + / -2. That is why the non-parametric Kruskal-Wallis test was used to investigate the research question.

Table 1

Testing Normality of Metacognitive Awareness by Groups

	N	Skewness		Kurtosis	
Group	Statistic	Statistic	Std. Error	Statistic	Std. Error
SRL(C&E)	41	-2.226	.374	5.104	.733
SRL(C)	41	.591	.374	-.523	.733
FonF	40	.116	.374	-.562	.733

The descriptive statistics for the three groups on metacognitive awareness are shown in Table 2. The SRL (C & E) group had the highest median score on metacognitive awareness (Mdn = 4.64), according to the findings. This was followed by the SRL (C) (Mdn = 3.63) and FonF (Mdn = 1.85) groups.

Table 2

Mean Ranks and Medians on Metacognitive Awareness by Groups

Group	N	Mean Rank	Median
SRL(C&E)	41	98.10	4.64
SRL(C)	41	62.90	3.63
FonF	40	20.50	1.85
Total	120		

The Kruskal-Wallis test results are displayed in Table 3. The results (H (2) = 99.87, $p < .05$, $\varepsilon^2 = .830$ representing a large effect size) revealed that there were significant variations in the three groups' median metacognitive awareness scores. As a result, the null hypothesis was rejected.

Table 3

Kruskal-Wallis Test; Metacognitive Awareness by Groups

	MetaCog
Kruskal-Wallis H	99.879
df	2
Asymp. Sig.	.000

Table 4 displays the outcomes of the post-hoc comparison tests. These findings lead to the following conclusion: A: The SRL(C) group (Mdn = 3.63) significantly outperformed the FonF (Mdn = 1.85) group on metacognitive awareness ($Z = -5.45$, $p < .05$).

Table 4

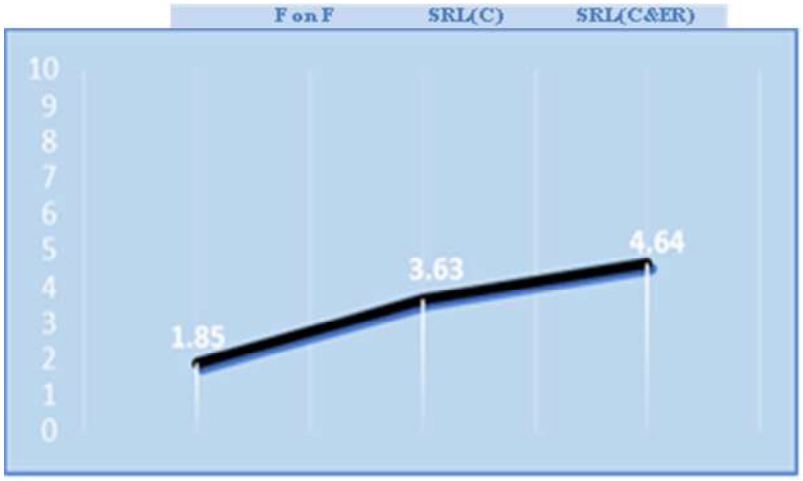
Pairwise Comparisons; Metacognitive Awareness by Groups

Sample 1-Sample 2	Test Statistic	Std. Error	Z	Sig.	Adj. Sig.
FonF- SRL(C)	-42.400	7.776	-5.453	.000	.000
FonF-SRL(C&ER)	-77.600	7.776	-9.980	.000	.000
SRL(C)-SRL(C&ER)	-35.200	7.776	-4.527	.000	.000

B: The SRL(C&ER) group (Mdn = 4.64) significantly outperformed the FonF (Mdn = 1.85) group on metacognitive awareness (Z = -9.96, p < .05); C: The SRL(C&ER) group (Mdn = 4.64) significantly outperformed the SRL(C) (Mdn = 3.63) group on metacognitive awareness (Z = -4.52, p < .05).

Figure 1

Medians on Metacognitive Awareness by Groups



Research Question Two

The results of comparing the pretests and posttests of SRLGQ in both groups, paired-sample t-tests were used to compare the pretests and posttests of SRLL models, including SRL(C&E) and SRL(C). Based on the findings, it is possible to assert that the participants had a higher mean on the posttests of SRL-CE (M = 261.15, SD = 14.37); SRL-C (M = 257.07, SD = 11.30) than on the pretests (M = 193.46, SD = 10.68); and (M = 184.20, SD = 12.38), respectively.

Table 5

Paired-Sample T-Tests; Pretest and Posttest of SRLGs

Paired Differences							
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
			Lower	Upper			
SRL(C&E)76.95	12.979	2.027	72.855	81.048	37.964	40	0 .000
SRL(C) 63.61	16.403	2.562	58.432	68.787	24.832	40	0.000

Thus, the results of the paired-sample t-tests (t (40) = 37.96, p < .05, r = .98); and (t (40) = 24.83, p < .05, r = .64), represent a large effect size, respectively. Table 5 shows that the subjects' SRL post-test means were significantly higher than their pretest means. As a result, the null hypothesis was rejected.

Research Question Three

Based on the findings of a paired-samples t-test, it can be argued that the participants had a higher mean on the posttest (M = 46.63, SD = .470) of ER than on the pretest (M = 39.24, SD = .261).

Table 6

Paired-Samples T-Test; Pretest and Posttest of ER-SR(C&E)

Paired Differences					t	df	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
			Lower	Upper			
7.39	3.807	.595	6.189	8.592	12.430	40	0.000

The results of the paired-samples t-test (t (40) = 12.43, p < .05, r = 0.73), representing a large effect size). Table 6 showed that the participants' ER post-test mean was significantly higher than their pretest mean. As a result, the null hypothesis was rejected.

Research Question Four and Five

With respect to the frequencies and percentages for the students' attitude towards SRL models in both experimental groups, the results of the LA questionnaire's data analysis indicated that the majority of the responses (n = 644, 71.39 %), and (n = 555, 61.53%) strongly agreed with SRL(C&ER) and SRL(C), respectively. Another 34.37 percent and 17.74 percent agreed with these teaching techniques. On the other hand, 1.88, and 2.66 percent disagreed, 0.0, and 1.33 percent strongly disagreed with these methods, and 1.88, and 2.22 percent were neutral. In the same vein, the results of analysis of chi-square ($\chi 2$ (4) = 1559.89. p < .05, Cramer's V = .657), and ($\chi 2$ (4) = 1342.56. p < 0.05, Cramer's V = 0.512), respectively representing a large effect size, revealed that the observed differences were statistically different. In other words, the majority of the students in both groups significantly held a positive attitude towards their instructional techniques.

Meanwhile, the data from the participants' perceptions about the efficiency of the SRL models was collected through open-ended questions and texts of their diaries, and then responses were coded in such a way that specific statements were analyzed and categorized into themes, including usefulness, strengths, and challenges. The data was analyzed by the second rater to ensure its credibility. In sum, they expressed that they valued the chance to contribute to the class, exercise

their agency, and take charge of their learning in a setting that promoted shared accountability between the teacher and the students. The majority of students in the SRL(C&ER) group highlighted the impact of the affective freedom technique on their motivation and self-confidence. Participants saw self-awareness as a vital contribution to informing their learning because it implied the development of suitable learning practices and academic success. However, a lack of time and insufficient feedback from many sources constituted areas of some learners' challenges when performing tasks.

Discussion

The present study was conducted to investigate whether self-regulated learning models, which are differentiated by emotion regulation as a missing practical part in most SRL models, and the Focus on Form method as a control group, had any statistically significant effect on the metacognitive awareness of Iranian EFL learners.

Regarding the first research question, the results showed that of the two self-regulated models in this study, the cyclical model, in addition to emotion regulation, could significantly affect the metacognitive awareness of EFL learners and resulted in the best performance. And it was followed by the cyclical model and a focus on form, respectively. It is worth noting that the outcomes of this study are supported by Bandura' socio-cognitive theory, and information processing theories, which assert that metacognitive awareness is a reflection of self-regulation (Schunk, 1991). Also, the results of this study provide support for previous studies regarding the positive effect of self-regulated learning on the metacognitive awareness of learners (e.g., Amini et al., 2020; Balashov et al., 2021; Bursali & Öz , 2018; Maftoon & Tasnimi, 2014; Rahimi & Abedi, 2015; Sumarno et al., 2022; Yeschenko, 2017; Wijaya, 2022; Zeng & Goh, 2018).

Furthermore, the results of the SRLGQ pretests and posttests in both self-regulated learning models also supported the effect of the SRL strategies instruction on improving significantly the learning behavior of the participants in terms of engagement in self-regulated strategy use, which is consistent with Scholer et al. (2018), which could be the result of a positive view of one's self-efficacy and high motivation.

The third research question, the findings of the pre-tests and post-tests of ERQ, proved the strong relationship between learners' emotion change, and metacognitive awareness of grammar strategies; it also confirmed the influence of the emotional regulation technique instruction on considerably enhancing learners' emotional states, which led to better cognitive processing and more engagement of learners in SRL and self-awareness, as confirmed by Shao et al. (2020) and Woodrow (2006).

The Fourth and Fifth research questions, the results of quantitative and qualitative data analyses of learners' attitudes towards integrated instruction models, represented the majority of the students in both groups significantly held a positive attitude towards their instructional techniques. Indeed, the qualitative findings

supported the quantitative results. The results of both quantitative and qualitative studies provide strong support for the effect of self-regulated language learning on the metacognitive awareness of grammar strategies of EFL learners.

With regard to the effect of the influential variables associated with learners, tasks, and strategies on metacognitive awareness development (Duell, 1986; Flavell & Wellman, 1977), there could be several possible explanations for such results.

Firstly, concerning the variables of learners, learners' engagement in SRL strategies within designed focus on form tasks along with emotion regulation leads to more awareness of learning processes. In such a way, learners can evaluate their own strengths and weaknesses. It can also contribute to a reduction in response time for a particular circumstance as a result of increased awareness, as well as potentially less time to accomplish activities. As a result, the outcome of greater metacognitive awareness could be realized in optimal learning behavior as self-regulated learning, which eventually leads to language acquisition. In terms of emotion regulation, it indirectly enhances metacognitive awareness by increasing the learner's incentive to engage in self-regulated learning. Indeed, as a social function of metacognition, understanding learners' emotions at the early stage of learning modifies individuals' attitudes, which influences their learning behavior and actions. It can assist individuals in identifying the strengths and limitations of specific methods as well as introduce them to new strategies that they can incorporate into their repertoire. Likewise, how people think about attitudes has a big influence on how they act. Attitude metacognition influences how people act, especially how they interact with others. Indeed, the positive associations between emotion regulation, self-regulated language learning, and metacognitive awareness corroborate Fredrickson's (2001) broaden-and-build theory (BBT) of positive emotions and their associated practical functions.

Secondly, concerning the variables of strategies, SRL strategies instruction and use, such as goal setting and planning at the preliminary stage of learning, demand learners' attention to the learning process, and the selection of the proper strategy, This view is consistent with Ridley et al. (1992), who stated that there is an interactive relationship between self-set goals as a self-regulatory behavior and a high level of metacognitive awareness that has contributed to individuals' performance. Indeed, the cyclical nature of SRL learning, constantly going back and forth between phases of data analysis as needed, reinforces the metacognitive awareness of learners' grammar strategies.

In the second phase of the cognitive and metacognitive regulation strategy, self-observation, self-monitoring, or self-supervision of the learning process is carried out during the performance, which enriches learners with information about their own cognitive processing and increases metacognitive awareness. In turn, this procedure also potentiates goal-setting and plans regulatory strategy. In this regard, this study lends support to Nash-Ditzel's (2010) view that metacognitive strategies can improve self-regulation. In the self-reflection phase, learners' behaviors are influenced by their prior performance through acquiring feedback, as highlighted by

the cyclical nature of self-regulated learning based on Banduras' socio-cognitive theory (Zimmerman, 2011).

Thirdly, concerning the variables of tasks, the cyclical model of SRL, in addition to emotion regulation, provided more evidence of the reciprocal effect of two variables on each other, which led to the improvement of both metacognitive awareness and self-regulated learning, assisting in distinguishing the proper strategy for doing a task and evaluating the effectiveness of the selected strategy in cognitive processing. On the other hand, task understanding paves the way to think about one's own thinking processes, which is very essential for selecting an appropriate strategy tailored to the learning task. As an instructional framework, SRL helped the researchers integrate some potential elements to improve the participants' metacognitive awareness of grammar strategies through multi-strategies based instruction along with practicing them within designed input and output-oriented Focus on Form tasks, including input flooding, organizing, transforming, repetition, summarizing, paraphrasing, and discussion, which draw learners' attention to grammatical structures as an end-product of learning, as confirmed by Borkowski and Cavanaugh (1979), and Lee (2007), such a way that it is preferable to employ multiple tasks to teach strategies.

Conclusion and Implication

This paper aims at evaluating the effect of SRL- based Focus on Form on the metacognitive awareness of grammar strategies of Iranian EFL learners. This study was an attempt to highlight the significant role of SRL strategies in instruction, which by itself cannot ensure self-awareness. Indeed, the efficiency of cognitive and metacognitive regulation is determined by self-regulatory skills, which involve a variety of mental configurations, including motivational and emotional ones, which potentiate metacognitive awareness as well.

The findings accentuate the importance of using the SRL as a possible way of evaluating and monitoring the process-oriented strategies used by EFL learners, which makes a meaningful bridge skillfully among four major notions: strategy use, focus on form, emotion regulation, and metacognitive awareness.

However, the limitations of this study are the variability of learners in terms of the frequency of self-regulated techniques utilized during activities and psychological qualities, which are important variables in language learning. Therefore, further investigations are also suggested concerning the frequency of learners' engagement in SRL strategies. Another limitation of this study is the samples' intermediate language level. As a result, caution should be exercised regarding the results' generalizability to lower or higher language levels.

Regarding the beneficial insights into the blessings of SRL for metacognitive awareness of EFL learners, some areas of further research can also be evolved. These results may suggest some substantial theoretical as well as pedagogical implications for researchers, teachers, syllabus designers, and learners.

Concerning the theoretical implications, the current study contributes to the social cognitive theory and information processing theories by providing further evidence that the metacognitive awareness of grammar strategies of EFL learners increased in the context of SRL. The positive effect of self-regulated strategies use is a result of the motivational and emotional strategy use of learners, which amplifies Zimmerman 's (2000) cyclical self-regulated learning theory by implementing it in practice and supports Bandura's (1997) theory of sources of self-efficacy.

Furthermore, the significant effect of SRL on metacognitive awareness confirmed the equal importance of the SRL strategies in learning, which is suggested by social cognitive theory (Bandura, 1986), environmental, behavioral, and personal processes. On the other hand, these findings lend support to focus on form hypotheses (Swain, 2000), which enrich focus on form underlying theories by including self-regulated strategies in addition to emotion regulation.

Concerning the pedagogical implications for EFL learners, the results of this study can provide more opportunities to engage learners in interactive, active learning. Of particular interest in this study is diminishing learning barriers through applying emotion regulation and practicing SRL strategies within multi-dimensional tasks such as input- and output-oriented activities, in order to engage learners more in the learning process, which expands their self-awareness and deepens their knowledge of the language.

Regarding EFL teachers, to assist teachers in putting the theories into practice, more effort is required from the instructor in terms of SRL strategy instruction and management. To this end, it is essential that instructors can also be provided with training in designing SRL tasks that lead to the appropriate model with respect to the English language learners' level, and age.

This study, in addition, provides empirical evidence for how enriched texts with grammatical structures, speaking, and writing along with SRL strategies could be integrated to promote learners' metacognitive awareness. This type of finding underlines the need for teachers and syllabus designers to pay more attention to integrated tasks in EFL classrooms. Relying on the students' positive perception of SRL based Focus on Form, it is worth investigating whether this approach has any effect on learners' motivation for syntactic knowledge learning.

Some areas of future research can be developed based on the positive insights regarding the benefits of SRL for metacognitive awareness of grammar strategies. It is worth investigating whether this approach has any effect on learners' metalinguistic, critical thinking, motivation, self-confidence, or self-efficacy.

The interactive and dynamic nature of SRL in this study, along with applying emotion regulation, raises a claim for further research in developing language skills, which demands considering inner psychological factors like their language level and multiple intelligence within an S / F language setting. It is important to increase teachers' knowledge of this dynamism among many different factors. They must be responsible for offering chances that advance all aspects of self-regulated learning.

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