Psychometric Properties of Self-Regulated Learning Strategies in Learning English Grammar and English Grammar Self-Efficacy Scales

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The study reports on the psychometric properties of instruments that can measure EFL students' self-regulated learning strategy use and English grammar self-efficacy and examines the relationship between these two constructs. 350 male and 432 female students, aged between 16 and 17, from two high schools in Vietnam participated in the survey. The participants answered the Questionnaire of Self-Regulated Learning Strategies in Learning English Grammar (*QSRLSLEG),* and the Questionnaire of English Grammar Self-Efficacy (QEGSE). The disjoint two-stage approach for Partial Least Square-Structural Equation was used to analyze the data. The results showed that the 24-item QSRLSLEG and 8-item QEGSE have face, content, and construct validity and reliability. A moderate relationship between SRL strategies in English grammar learning and English grammar SE was found. Both instruments are reliable and valid assessment tools, providing useful information for researchers and English teachers to investigate important aspects of students' self-regulation in learning English grammar.

Keywords: English language learners, grammar, self-efficacy, self-regulated learning, psychometric, Vietnam

INTRODUCTION

Significant advances and developments in second language acquisition have proliferated in the past few decades, especially in conceptualizing the strategy construct and constructing strategy inventories (e.g., Oxford, 1990a; Schunk and Zimmerman, 1998; Zimmerman, 2000c; Pawlak, 2011a). While most of the early studies on strategic learning were conducted in English-speaking countries, and inventories of language learning strategies were validated only in the English as a second language (ESL) environments (e.g., Stern, 1975; Oxford, 1986; Wenden, 1987; Nyikos and Oxford, 1993), beginning from the 1990s, a few inventories (e.g., O'Malley and Chamot, 1990; Oxford, 1990a) have been validated in EFL contexts (e.g., Brown et al., 2001; Aghaie and Zhang, 2012; Dong, 2016). Also, the conceptualization of strategy inventories has shifted from the notion of strategic learning to self-regulation, examined under psychological perspectives. This is largely due to a paradigm shift from a focus on specific strategic behaviors to understanding the underlying trait from the perspective of the learners' actual employment of strategies, i.e., self-regulation (Dörnyei, 2005; Rose, 2012; Oxford, 2016b).

Bolstered by claims that strategy inventories were void of strong theoretical underpinnings (e.g., Takeuchi, 2019a), this shift has led to contentions among scholars as to whether learning strategy research should be totally replaced by self-regulation studies. While Dörnyei (2005) and Tseng et al. (2006) put forward that self-regulation questionnaire had more psychometric soundness than traditional language learning strategy instruments, Oxford (2016b) and Rose

et al. (2018) contend that researchers should not be bound to only learner strategy or self-regulation frameworks but instead combine these two frameworks to paint a clearer picture of L2 strategic learning. However, recent attention has been drawn to designing strategy inventories to assess EFL learners' self-regulation in learning English in general (e.g., Chen et al., 2020; Tragant et al., 2013; Wang et al., 2013), and language aspects such as writing (e.g., Zhang and Qin, 2018) and reading (e.g., Zhang, 2001).

When it comes to measuring students' self-regulation in language learning, instruments tend to be adapted from various earlier sources (Li, 2020). For instance, Barnard et al. (2009) Online SRL Questionnaire was adapted to measure students' SRL strategy use in writing skills. Another instance is Chularut and DeBacker (2004) study on the impact of concept mapping on self-efficacy, self-regulation, and achievement among ESL students, adapting Miller et al. (1996) Attitude Toward Mathematics Survey to measure self-regulation and self-efficacy. However, the literature on grammar teaching and learning provides few instances of focus on psychological factors, i.e., SE and SRL (e.g., Fard, 2010; Gorlewski and Annable, 2012) as studies tend to give greater concern to grammar teaching methods. Also, very few studies have examined Vietnamese high school students' SRL for language learning (e.g., Ngo, 2019; Tran and Phan, 2021).

The SRL strategies EFL learners use to understand how language works through its grammar should, therefore, be well-researched and documented in Vietnam where grammar-based instruction is prelevant (Phung et al., 2021), where the average English score on recent high-stakes exams has been generally quite low (e.g., Duong, 2017; Le, 2019), where English teaching quality is assessed by the pass rate at national high-stakes exams (Do, 2013) and where SRL strategy research is still in infancy (e.g.,Nguyen, 2016; Nguyen, 2018). Understanding high school Vietnamese students' SRL strategy use in learning English grammar is necessary and seen to be potentially relevant to many similar ELT contexts in the country as well as the region. SRL strategies at high school are essential because SRL holds the key to competence during the lifelong learning process (European Council, 2002), promoting students' autonomy in grammar learning. This study was probably the first devoted to investigating high school students' self-regulated learning in learning English grammar and English grammar self-efficacy in Vietnam. The purpose of the study is to establish the reliability and validity information of Questionnaire of Self-regulated Learning Strategies in Learning English Grammar and Questionnaire of English Grammar Self-Efficacy. Besides, the study investigates the predictive relevance of English grammar self-efficacy on self-regulated learning strategies in learning English grammar.

LITERATURE REVIEW

Bandura (1986) Social Cognitive Theory

The central idea of Bandura (1986) social cognitive theory emphasizes that social environment is a necessary condition for human learning to occur, that individuals can learn by observing other people or models to determine how skills,

FIGURE 1 | Bandura's (1986) model of triadic reciprocal determinism.
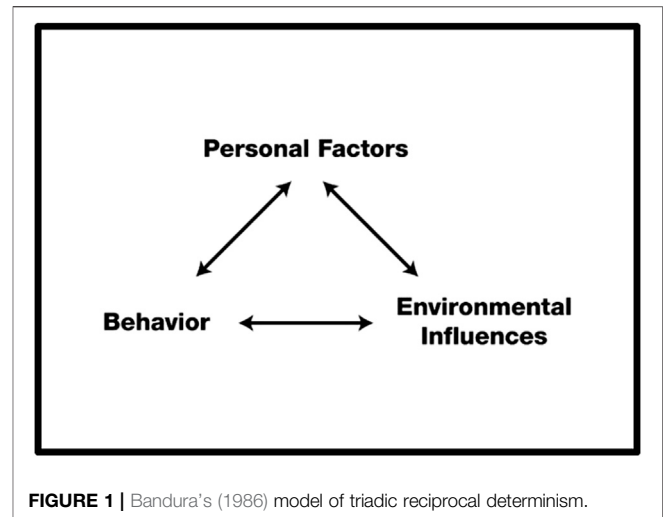
strategies, knowledge, attitudes, and beliefs can be acquired, and that the expected outcome of the individual performance is based on one's beliefs about one's capabilities (Zimmerman and Schunk, 2012a). In another sense, this theory assumes that people tend to be goal-directed, purposeful, and motivated through their self-efficacy beliefs and outcome expectations from their actions within their social contexts (Erlich and Russ-Eft, 2011). One prominent aspect of this theory is its visual model of reciprocal causation, focusing on the triadic interrelationship of personal (cognitive, affective, and biological events), behavioral and environmental influences (Bandura, 1989a). **Figure 1** illustrates this relationship.

The personal factors, which encompass self-directed capabilities such as competency development, self-efficacy beliefs to exercise control, and self-regulatory capabilities to influence motivation and actions, can be developed by social and environmental influences in interaction with the social environment (Bandura, 1989a). Individuals' expectations, cognitive ability, beliefs, and emotions are altered, and different emotional reactions are evoked through modeling, social persuasion, and instructions. Also, behaviors are influenced by environmental factors and social conditions through cognitive processes. In return, individuals can affect the environment and provoke different chains of reactions from the social environment *via* their social roles, status, physical characteristics, and appropriate behaviors. Bandura (1989a) postulated that from the social cognitive theoretical perspectives, individuals are defined by different elemental abilities such as vicarious, symbolic, forethought, self-regulatory, and self-reflective capabilities.

Since Bandura's published work, self-regulation has expanded with the emergence of self-regulation strategies research in academic domains (Zimmerman and Schunk, 2001; Graham et al., 2005) because self-regulation can sustain learning efforts and is a critical predictor of learners' academic achievements (Zimmerman and Schunk, 2012a). Dinsmore et al. (2008) commented that the increased focus on self-regulation in academic settings seemed to have a direct contribution to the

appearance of a new term, SRL, and observed that most models of SRL encompass both metacognition and self-regulation to shape its lens on learner monitoring. If metacognition has been positioned in what Moshman (1982, 2018a) labeled endogenous constructivism, self-regulation was described as exogenous constructivism. It is because developmental psychologists (e.g., Flavell) were most concerned with how individuals' awareness of their thoughts was shaped through experience and maturation while neobehaviorists, e.g., Bandura were more concerned about the person-environment–behavior interrelationship. In this sense, metacognition is more cognitively oriented, whereas self-regulation is more related to human actions than thinking.

Meanwhile, SRL is an umbrella term incorporating various strategies and processes such as goal setting, metacognition, and self-evaluation and has become "an important new approach to the study of student academic achievement" (Zimmerman, 1986, p. 307). According to Zimmerman (1989a), applying a social-cognitive approach to SRL has three advantages. First, the effects of one's self-regulatory influences can be distinguished from overt behaviors so that the advantages of each factor can be explained. Second, learners' SRL processes can be linked to a particular social learning environment or behavior-related experiences, and the reciprocal effects of SRL and social factors can be explained. Finally, the two cardinal processes, self-efficacy beliefs, and strategy use, *via* which SRL is accomplished, can be explained in connection with learners' motivation and achievement in school.

Zimmerman and Moylan (2009) Self-Regulated Learning Model

Based on Bandura (1986) work, Zimmerman (1986) defined SRL in terms of metacognition, motivation, and behaviors, positing that learners became active participants at different stages in their SRL process because they have metacognitive strategies (planning, organizing, self-instructing, self-monitoring, and self-evaluating), motivation (competence, self-efficacy, and autonomy), and appropriate behaviors (selecting, structuring, and creating conducive learning environments). In another sense, the SRL model is a conceptual framework in which the motivational, emotional, and cognitive aspects of learning are merged (Panadero, 2017). In contrast to the traditional assessment, in which students are assessed based on their mental ability, this SRL model aims to describe and explain how learners learn and can achieve regardless of mental capacity, social, environmental backgrounds, or quality of schooling (Zimmerman and Schunk, 2012a). Self-regulated learners use a diversity of subprocesses "to achieve self-designated goals in their real-world contexts" (Zimmerman, 1986, p. 307). Based on Zimmerman (1989a) model, Zimmerman and Moylan (2009) put forward three cyclical phases of SRL, including forethought, performance, and self-reflection. **Figure 2** below illustrates an SRL model of three interrelated phases.

In this study, Zimmerman and Moylan (2009) model was used as a guide to the development of the instrument because of two primary reasons. First, it is rooted in Bandura (1989a) social-cognitive theory and involves metacognitive, cognitive, and motivational features, explaining both students' thinking and behavior. The application of social cognitive principles has been accepted in diverse fields such as education, health, moral development, and social, cognitive, motor, and self-regulation skills (Zimmerman and Schunk, 2012a). Moreover, this social-cognitive approach has been validated by meta-analyses as tailored explicitly to SRL intervention programs (Dignath and Büttner 2008; Dignath et al., 2008). Another important reason is that it has received considerable empirical evidence and support (Panadero, 2017). Based on the model of the triadic relationship of three main interrelated factors in the SRL process, personal self-regulation in grammar learning indicates employing adaptively the affective, cognitive, or metacognitive strategies such as when a learner pays attention to the surrounding words of the required answer in the grammar exercise. Behavioral self-regulation refers to using performance strategies adaptively, such as when a learner quizzes themselves to see how much they are learning during completing grammar exercises. Environmental self-regulation concerns using strategies adaptively to regulate the context, such as when a learner chooses to study in a quiet place.

Self-Regulated Learning in English Grammar Learning

SRL strategies usually include strategies such as cognitive, metacognitive, and resource or environmental management, and behavioral management strategies (Cleary, 2006; Dan, 2008). Zimmerman and Pons (1986) identified 14 SRL strategies (e.g., self-evaluation, seeking information, environmental structuring, rehearsing and memorizing, and review notes) that 10th graders used during class, homework, and study. Central to SRL strategies are metacognitive strategies (Efklides, 2008) such as planning, making predictions, monitoring, evaluating, and reflecting (Flavell, 1979; Moshman, 2018a), which can enhance students' learning outcomes (Donker et al., 2014) and have a sustained effect on their academic performance (De Boer et al., 2018). Although cognitive strategies made up the largest proportion of strategies in language learning (Pawlak, 2013b; Zhang et al., 2014), elements of metacognition and self-regulation have been integrated into recent strategic language learning studies in EFL contexts (e.g., Kim and Nor, 2019; An et al., 2020) to broaden the traditional strategy research.

Previous studies documented the effects of metacognitive strategies in L2 grammar learning (Gimeno, 2002; Fard, 2010). For instance, Gimeno (2002) conducted a grammar learning strategy intervention on 60 Spanish secondary school students to compare the effects of metacognitive and cognitive strategies on learning English conditional sentence Type 2. The results show that the metacognitive group benefited from macro strategies such as preparation, presentation, practice, evaluation, and expansion, and outperformed the cognitive group in grammar interpretation tests and inductive ability. Though it was not clear how the researcher conducted the
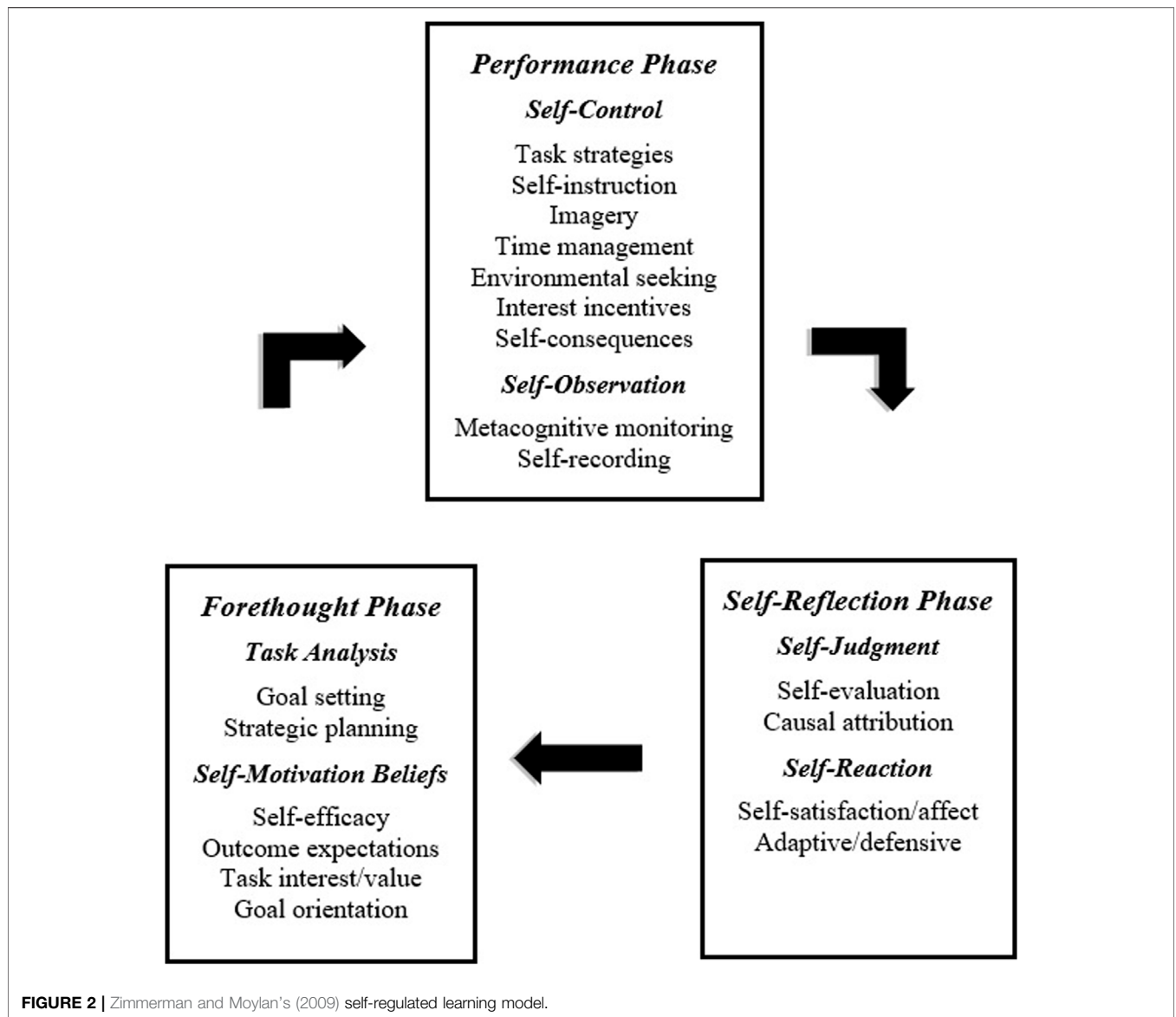
FIGURE 2 | Zimmerman and Moylan's (2009) self-regulated learning model.

training for the metacognitive and cognitive skills as it seemed all activities are mainly implicit and inductive, the findings indicate that metacognitive strategies can be effective in learning. This further indicates that in comparison to cognitive strategies (e.g., memorization of grammatical rules, repetition, and over-practicing), which are often encouraged in many EFL language classrooms (Oxford et al., 2007), there may be other strategies in learning grammar that can be as or more effective because students who use only memorization strategies tend to have lower performance scores than students who employ metacognitive strategies (Chiu et al., 2007).

Prior studies report that students use a variety of strategies to learn grammar such as cognitive, metacognitive, and environmental and behavioral management strategies (e.g., Supakorn et al., 2018; Truong et al., 2022 under review). Nevertheless, students who use metacognitive strategies develop more structural grammar knowledge. For instance,

Fard (2010) investigated the effects of cognitive and metacognitive strategies on Intermediate Iranian freshmen' development of structural grammar knowledge through 12 training sessions with eight grammatical points. 66 students were randomly assigned to three groups: cognitive strategy, metacognitive strategy, and control. The cognitive strategy group was trained with elaboration, translation, deduction, repetition, recombination, and transfer strategies. Meanwhile, the metacognitive strategy group was trained with planning, self-management, self-monitoring, and self-evaluation, using the think-aloud protocol, and the control group was taught with the traditional learning method. The findings indicate that the metacognitive group showed more significant structural grammar knowledge than the control and cognitive groups.

However, metacognitive self-regulation strategies are not sufficiently represented in the most recent grammar learning

strategies inventories, e.g., Pawlak, 2009; Pawlak, 2013b GLSI, which consists of mainly cognitive strategies. Besides, when researchers conducted grammar strategy research, they tended to rely on previously developed strategy classifications, shown in a few existing grammar intervention studies. For instance, Gimeno (2002) adopted metacognitive strategies from various taxonomies, developed by O'Malley and Chamot (1990), Rubin (1975), and Wenden (1987) to design the metacognitive strategy intervention for Spanish high school students to learn English grammar conditional Type 2. Similarly, Fard (2010) used Purpura (1999)'s Metacognitive Strategy Questionnaires by Item Type to design the metacognitive strategy invention for Iranian students. The paucity of research investigating the effectiveness of SRL strategy intervention to address grammar learning problems and enhance grammar achievement in EFL contexts could be ascribed to the lack of an assessment instrument built on sound theoretical foundations to measure students' SRL strategies in grammar learning. When students become self-regulated in learning grammar, they can tackle grammar learning problems independently and adapt to various learning environments such as deductive versus inductive, GTM versus CLT, and explicit versus implicit.

Most of the available SRL strategy inventories are concerned with learning reading and writing skills, and SRL research for learning language aspects, e.g., grammar has been still understudied in the EFL environments (Anderson, 2005; Oxford et al., 2007). Moreover, research about detailed information about the cognitive and metacognitive strategies used primarily in grammar learning is still conspicuously lacking (Rubin, 2005a; Pawlak, 2020d), let alone SRL strategies in learning grammar. The paucity of studies in using strategies related to learning and understanding grammar is quite surprising as grammar represents an essential tool in both language comprehension and production. Although there exist a few grammar learning strategies inventories (e.g., Oxford et al., 2007; Cohen et al., 2011; Pawlak, 2018c), as well as notable research works on grammar learning strategies (e.g., Cohen and Weaver, 2004; Oxford et al., 2007; Cohen et al., 2011; Pawlak, 2018c), there is still a paucity of research on SRL strategies in grammar learning. Also, a context-sensitive taxonomy of SRL strategies in learning grammar that researchers can base on to develop an SRL strategy inventory is still lacking, especially in an EFL context.

The positive correlation between SRL strategy use and English proficiency or language-related performance has long been established in language research for diverse learners from elementary and secondary school (e.g., Perry, 1998; Dent and Koenka, 2016; Bai and Guo, 2018; Chu et al., 2020) to college and university (e.g., Chen et al., 2020; Sun and Wang, 2020; Wang et al., 2013). SRL strategies also have overall positive impacts on learning motivation (e.g., Dignath et al., 2008; De Boer et al., 2018). Moreover, there has been a tendency to incorporate SRL instruction across various domains and content areas at high school (DiBenedetto, 2018), as SRL holds the key to competence during the lifelong learning process (European Council, 2002), and students who can skillfully self-regulate their learning

processes are more certain to achieve academic success (Zimmerman, 1986). Thus, understanding SRL strategies in learning one aspect of the English language, i.e., grammar that merits further research (Pawlak, 2020d) is essential.

Self-Efficacy

It should be noted that SE occupies a crucial notion in Bandura's works and is an essential motivational factor in SRL (Zimmerman, 1998b). It is defined as people's beliefs about their capability to realize courses of action and expectations about the outcomes (Bandura, 2006c) or "confidence the person has in bringing about a specific outcome" (Efklides, 2011a, p.8). Bandura (1989a) also mentioned that SE served as a cognitive factor influencing personal control over motivation. People who believe that they can achieve set targets or goals will not feel demotivated by failures. They can maintain motivation and exert extraordinary efforts until they succeed, whereas, those who doubt their capability might feel discouraged by unsuccessful efforts or failed attempts. Because SE affects the way one feels, thinks, behaves, and motivates oneself, it can influence learners in choosing activities, making efforts, staying persistent, and employing learning strategies to benefit their studies (Zimmerman and Moylan, 2009). SE, a pivotal component in SRL, can influence all the subprocesses in a self-regulatory cycle (Bong, 2013) and has proved to be a positive predictor of academic outcomes (Multon et al., 1991).

Studies have shown that Asian students reported a medium level of English SE. For example, Truong and Wang (2019) found that Vietnamese students had a medium level of English SE and mastery experience significantly predicted SE. Similarly, Chinese and Korean students had a moderate self-efficacious level (Wang et al., 2013; Wang and Bai, 2017). Differences were also found among Asian students in different countries. For example, students in Hong Kong and Japan reported lower SE scores than students from Indonesia, and Japanese students reported the lowest scores of all (Schwarzer et al., 1997). Moreover, the differences in the perceived SE scores across nations may reflect variations in linguistic and cultural backgrounds, which might moderate the associations between SE and related constructs (e.g., self-regulation) (Eaton and Dembo, 1997; Salili et al., 2001).

Besides, a positive correlation between SE and overall language proficiency has been documented. Highly self-efficacious students were more likely to perform better than students with low SE (e.g., Truong and Wang, 2019; Wang and Sun, 2020). Consistent with this finding, prior studies documented that grammar SE positively correlates with performance in grammar (e.g., Collins and Bissell, 2004; Mustapha and Mustapha, 2017; Kholili, 2020). Despite this, there remains a dearth of research into grammar SE and none of these studies has been conducted in Vietnam. Understanding grammar SE is important because it can not only affect students' grammar performance but also self-regulated learning.

Relationship Between Self-Efficacy and Self-Regulated Learning Strategies

Previous studies found a positive interrelationship between high self-efficacious levels and increased SRL strategy use in English

TABLE 1 | Demographic information of participants (*N* = 782).

Profile of respondents	—	Frequency	Percentage (%)
Gender	Male	350	44.8
	Female	432	55.2
Age	16	464	59.3
	17	318	40.7
Grade	10	464	59.3
	11	318	40.7
Length of studying english	<5 years	52	6.6
	5–7 years	215	27.5
	8–9 years	420	53.7
	>10 years	95	12.1

learning (Kim et al., 2015; Cho and Kim, 2019). For instance, Su et al. (2018) found a correlation between Chinese university students' online self-regulation and SE in learning English as a foreign language, revealing that students' use of self-evaluation and environmental structuring significantly predicted their SE in skills learning. Bai and Guo (2018) reported that primary school Hong Kong students' use of self-monitoring strategies had a strong relationship with writing SE. Also, experimental studies indicate that instructing students with SRL strategies enhanced their linguistic SE (ElAdl and Polpol, 2020; Teng and Zhang, 2020).

Although SRL strategies can predict SE, most studies found SE had a significant relationship with and predictive relevance on SRL (Lim and Yeo, 2021). For example, Kaiser et al. (2020) reported that SE and affect explained 41.9 percent of variance on Brazilian undergraduates' SRL strategies. Similarly, Kim et al. (2015) revealed significant differences in SRL strategy use between Korean students with low and those with medium/high SE. However, little investigation has been conducted concerning the relationship between grammar SE and SRL strategies in learning English grammar. Nevertheless, based on previous studies, it could be hypothesized that grammar SE correlates with and predicts SRL strategies in learning English grammar.

METHODOLOGY

Participants

782 students (350 males and 432 females) aged between 16 and 17 were conveniently recruited to participate in this study. These students come from two different high schools in Southern Vietnam: one public (522 students) and one private (260 students). In particular, 59.3 percent of participants in grade 10 and 40.7 percent in grade 11 volunteered to answer the survey. Most of the participant students had five to nine years of learning English. About 6.6 percent started to learn English quite late, having less than 5 years of learning English while 12.1 percent began to learn English much earlier, i.e., having more than 10 years of learning English (**Table 1**).

All participants were enrolled in the fundamental English program and studied in focus on forms classrooms. Besides,

all of them had to sit for the high school graduation exam for the English subject in the second semester of the twelfth grade. Thus, developing a lexicogrammatical knowledge to pass high-stakes English exams is the primary focus at their high schools.

Instruments

While there is a dearth of guidelines related to constructing inventories, in this study, the researcher based the development of the two scales, i.e., Questionnaire of Self-Regulated Learning Strategies in Learning English Grammar (QSRLSLEG) and Questionnaire of English Grammar Self-Efficacy (QEGSE) on recommendations from experts in L2 strategy research (e.g., Oxford, 2016b; Rose et al., 2018).

Questionnaire of Self-Regulated Learning Strategies in Learning English Grammar

The Questionnaire of Self-regulated Learning Strategies in Learning English Grammar consists of 33 items consulted and adapted from various sources and questionnaires. The instruments were based on to develop QSRLSLEG because they comprise cognitive, metacognitive, and/or self-regulatory constructs, which were delineated as follows:

Cleary (2006) Self-Regulation Strategy Inventory-Self-Report

The original questionnaire has three factors (28 items) and was initially developed to measure high school science students' context-specific employment of self-regulatory strategies during learning and homework completion. Learners rate their frequency level of strategy use on a 5-point Likert scale with 1 denoting "almost never" and 5 denoting "almost always". Three factors were yielded from the confirmatory factor analysis: seeking/learning information (8 items: $\alpha = 0.84$), environment and behavior management (12 items: $\alpha = 0.88$), and maladaptive regulatory behaviors (8 items: $\alpha = 0.72$). A systematic review of Cleary (2006) SRSI-SR questionnaire conducted by Tise et al. (2019), which includes 18 studies and covered various disciplines (science, biology, history, math, English-language learning, and reading) highlights that overall reliability for the SRSI-SR among these studies is high, with Cronbach's alpha value ranging from 0.82 to 0.92. The internal consistency of this scale was also reported to be high (0.82) for the study in English language learning. Fifteen items from Cleary (2006) SRSI-SR were consulted to develop the items for seeking and learning information and managing environment and behavior factors in QSRLSLEG. Examples of these items were provided in **Supplementary Appendix Table S1**.

Howard et al.'s (2000) Inventory of Metacognitive Self-Regulation (IMSR)

Howard et al.'s (2000) IMSR consists of 32 items, nested under five factors: problem representation, knowledge of cognition, subtask monitoring, objectivity, and evaluation. Students respond to sentences on a 5-point Likert scale (with 1 indicating '*almost never*' and 5 '*almost always*'). The overall Cronbach's alpha value was high, $r = 0.94$, and for the subscales, Cronbach's alpha values ranged from 0.72 to 0.87. The IMSR was validated on junior high school students and was

found to predict content understanding and problem-solving ability. 18 items from Howard et al. (2000) were consulted to develop evaluation, objectivity, and monitoring constructs of QSRLSLEG (See **Supplementary Appendix Table S1**).

Pawlak (2018c) Grammar Learning Strategy Inventory (GLSI)

Pawlak's (2018c) GLSI, which comprises 70 five-point Likert scale items, was constructed by Pawlak (2009) and validated on 106 English-majored university students in Poland. The questionnaire includes four main categories: strategies used while performing communicative tasks, strategies aimed to develop explicit and implicit knowledge, and strategies used for correcting errors. The correlation between Pawlak (2018c) GLSI and Oxford's (1990a) SILL was high ($r = 0.80$), confirming construct validity. Besides, the overall reliability is satisfactory ($r = 0.89$). Among the categories, cognitive strategies had the highest correlation with the overall scale ($r = 0.98$), perhaps due to the highest number of items (50 out of 70), while metacognitive, affective, and social strategies had lower correlations ($r = 0.69$, 0.56, 0.54, respectively).

Horwitz's (1999) Beliefs about Language Learning

Horwitz's (1999) found that Japanese students of English beginner and intermediate levels positively believed that translation strategy effectively facilitated grammar learning. Hence, based on this finding, the item that describes the translation strategy in learning English grammar was nested under the seeking and learning information construct (See **Supplementary Appendix Table S1**).

In general, QSRLSLEG was measured on a five-point Likert scale, ranging from 1 ("*almost never*") to 5 ("*almost always*") (See **Supplementary Appendix Table S1**). The five sub-constructs in QSRLSLEG were delineated as follows:

Seeking and learning information (SLI) indicates students' use of cognitive strategies or using a specific study tactic during their grammar learning to seek information and acquire knowledge such as rehearsing, noticing, translation and taking notes, e.g., "When studying grammar in the English class, I read my class notes and the handouts over and over again," and "I notice the position of verbs, nouns, adjectives, and adverbs when I work on a grammar exercise".

Managing environment and behavior (MEB) refers to students' regulatory strategy use during studying and homework completion, such as time management and comprehension monitoring, e.g., "I finish all of my grammar studying before I play mobile games or online games or with my friends." and "I think about how best to study new grammar lessons before I begin studying them in class."

Monitoring (M) mentions learners' control of learning strategies to learn grammar. e.g., "I use different ways to memorize grammar rules, structures, usage or concepts" and, "I think about what information I need to answer the grammar exercise."

Evaluation (E) indicates the degree to which learners are aware of checking their work throughout the entire answer-seeking process to evaluate if it is being done correctly, e.g., "I look back at the grammar exercise to see if my answers make sense" and "I look back to see if I use the correct rules."

Objectivity (O) refers to learners' capacities to stand outside of themselves and think about their learning as it proceeds, which includes an awareness of one's learning goals and alternative choices in accomplishing a learning goal, e.g., "I think about how well I am learning when I work on a difficult grammar exercise" and "I think of several ways to complete the grammar exercise and then choose the best one."

Questionnaire of English Grammar Self-Efficacy (QEGSE)

QEGSE was adapted from the expectancy component, i.e., self-efficacy for learning and performance of Duncan et al.'s (2015) Motivated Strategies for Learning Questionnaire (MSLQ). QEGSE comprises the same number of items (8 items) as in the original component, which has a high reliability value ($r = 0.93$). QEGSE was measured on a seven-point Likert scale, ranging from 1 "*strongly disagree*" to 7 "*strongly agree*". Statements in QEGSE refer to students' capability to learn English grammar successfully and do well in grammar tests, e.g., "I believe I will receive an excellent grade in grammar tests." and "I am confident that I can understand the basic grammar concepts in the English subject."

Procedure

The data collection procedure took place within one week in the first semester of the academic year 2019–2020. The researcher received permission from the Department of Education and Training in Long An Province, Vietnam to survey both schools. Before the researcher visited the schools, participants at both schools were informed of the purpose of the study, given the informed consent form by their superintendents, and requested to return it on the date when they did the survey. Before the survey was administered, the researcher explained the research objectives to the students and ensured that their participation was voluntary and confidential. The questionnaires were distributed to students during their break period in their own classroom. The questionnaires took approximately 15 min to complete, and students answered them in the researcher's presence.

Data Analysis

Smart PLS (Version 3.3.3) was used to analyze the obtained data. The significant alpha level was set at 0.05, which is acceptable for most educational research (Fraenkel et al., 2011). Although EFA is a commonly used interdependence method for data reduction and identification of latent constructs to describe a psychological phenomenon (Hair et al., 2018), it is not an obligatory step in scale development except when no theory was established to describe the underlying constructs for a set of measured variables (Hair et al., 2020, p. 102). Also, to confirm the theoretical relationship between the latent constructs and observed variables, covariance-based structural equation modeling (CB-SEM) is often used after EFA. However, for predictive relevance, partial least square structural equation modeling (PLS-SEM) tends to be a better technique (Sharma et al., 2018). Confirmatory composite analysis (CCA) in
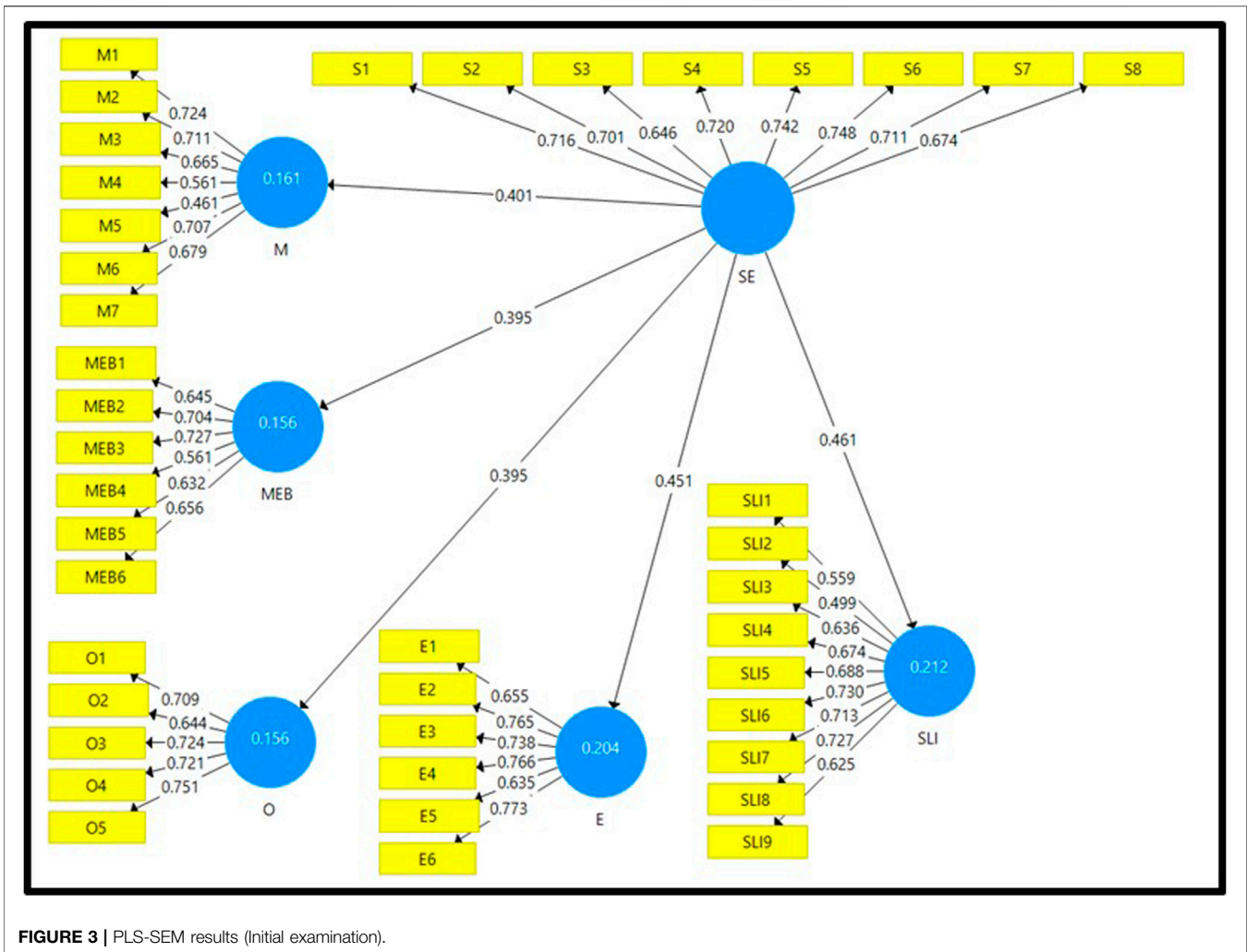
FIGURE 3 | PLS-SEM results (Initial examination).

partial least square (PLS-CCA) has been proposed as a protocol to confirm measurement models in PLS-SEM (Henseler et al., 2014).

This study adopted a disjoint two-stage approach (Jarvis et al., 2003) to assess the reflective measurement and structural model of QSRLEG and QEGSE. The use of the reflective model depends on the characteristics of items used to measure the construct (Coltman et al., 2008) in which items share a common theme and when items are added or dropped, the conceptual domain of the construct remains unchanged. Self-regulated learning strategies have been reported in previous studies combining various strategies such as monitoring, evaluation, and so on (e.g., Howard et al., 2000; Cleary, 2006; Bai and Wang, 2020). Thus, it can be predicted from the social cognitive theory that self-regulation in grammar learning also includes similar sub-constructs. Also, since the relationship between self-regulated learning and self-efficacy was established in prior studies, it is hypothesized that this relationship exists for grammar learning.

In the first stage, the model connecting all the lower-order components (including exogenous and endogenous constructs) was created and estimated. The reflective measurement models of the lower-construct components were first focused. In total, there are five lower constructs of SRL strategies in learning English grammar (monitoring, evaluation, managing environment and behavior, seeking and learning information, and objectivity) and the SE construct. In the second stage, the latent variable scores of the lower-order components from stage one were used to create and estimate the higher-order construct in stage two. The evaluation of stage two focuses on the reflective measurement model of the higher-order component, i.e., SRL strategies. For the higher-order component, the loadings of lower-order components, Cronbach's alpha, and CR were reported to establish indicator reliabilities. Also, AVE was computed to establish convergent validity. Based on the HTMT criterion, discriminant validity with other lower-order components could be established. Finally, the assessment of the structural model includes significance and relevance for path coefficients and Q^2.

TABLE 2 | Summary of measurement models.

Constructs	Items	Loadings[a]	AVE[b]	CR[c]	Cronbach's alpha[d]	T-statistics	VIF
Evaluation (E)	E2	0.803	0.633	0.873	0.807	48.143	1.632
	E3	0.776	—	—	—	37.036	1.591
	E4	0.807	—	—	—	44.831	1.650
	E6	0.796	—	—	—	39.02	1.719
Monitoring (M)	M1	0.735	0.510	0.839	0.723	30.215	1.482
	M2	0.736	—	—	—	29.112	1.426
	M3	0.676	—	—	—	22.458	1.314
	M6	0.722	—	—	—	26.741	1.494
	M7	0.699	—	—	—	24.995	1.360
Managing environment and behavior (MEB)	MEB1	0.669	0.475	0.819	0.723	20.26	1.276
	MEB2	0.723	—	—	—	22.285	1.420
	MEB3	0.724	—	—	—	28.666	1.417
	MEB5	0.651	—	—	—	17.916	1.267
	MEB6	0.675	—	—	—	20.606	1.308
Objectivity (O)	O1	0.734	0.553	0.832	0.730	27.938	1.331
	O3	0.748	—	—	—	26.579	1.410
	O4	0.723	—	—	—	23.756	1.348
	O5	0.769	—	—	—	30.691	1.424
Seeking and learning information (SLI)	SLI3	0.653	0.513	0.863	0.812	22.398	1.419
	SLI4	0.705	—	—	—	26.801	1.565
	SLI5	0.701	—	—	—	28.167	1.537
	SLI6	0.762	—	—	—	40.545	1.550
	SLI7	0.743	—	—	—	37.606	1.491
	SLI8	0.729	—	—	—	32.622	1.517
Self-efficacy (SE)	S1	0.719	0.502	0.889	0.858	33.828	1.778
	S2	0.704	—	—	—	29.569	2.156
	S3	0.642	—	—	—	26.323	1.379
	S4	0.723	—	—	—	36.666	2.187
	S5	0.744	—	—	—	38.829	1.873
	S6	0.747	—	—	—	42.095	1.804
	S7	0.711	—	—	—	31.658	1.689
	S8	0.670	—	—	—	27.119	1.582

Items removed: M4, M5, MB4, O2, E1, E5, SLI1, SLI2, and SLI9.
[a]*All indicators are over 0.50 (Hair et al., 2021).*
[b]*AVE> 0.50 (Fornell and Larcker, 1981; Hair et al., 2019), except managing environment and behavior (0.475).*
[c]*Composite reliability >.70, indicating adequate convergence (Gefen et al., 2000).*
[d]*Cronbach's apha between 0.60 and 0.70: acceptable for exploratory research and between 0.70 and 0.90: satisfactory to good; higher than 0.95: problematic (Hair et al., 2019).*

RESULTS

Measurement Model

The quality of the constructs in the study is assessed based on the evaluation of the measurement model. The assessment of the quality criteria starts with the evaluation of the factor loadings which is followed by establishing the construct reliability and validity.

Indicator reliability: Standardized factor loadings refer to the extent to which each item in the correlation matrix correlates with the given principal component, ranging from −1.0 to +1.0 with high absolute values indicating a higher correlation of the items with the underlying factor (Field, 2018). Hair et al. (2020) stated that the standardized loadings must be equal to or over 0.708, $t > \pm 1.96$ when reflective measurement models were evaluated. If the composite reliability (CR) and average variance extracted (AVE) are lower than the threshold values, the elimination of weaker outer factor loadings can increase those values. However, maintaining indicators with lower outer loadings, i.e., from 0.40 to 0.70 can be considered to maintain content validity (Hair et al.,

2021). The initial examination from the PLS Algorithm shows factor loadings in **Figure 3**.

After the PLS algorithm was run, to improve AVEs, nine items were excluded, involving M4, M5, MB4, O2, E1, E5, SLI1, SLI2, and SLI9. Most of the remaining items had factor loadings over 0.70 and some from 0.653 to 0.699 (**Table 1**).

Variance Inflation Factor (VIF): VIF statistic was utilized to assess multicollinearity in the indicators (Fornell and Bookstein, 1982). According to Hair et al. (2018), multicollinearity is a serious issue if VIF is over 5. Ideally, VIF should be lower than 3. Results from PLS Algorithm show that all the VIF values for the indicators in the study are below 3 (**Table 1**).

Construct reliability: The two most commonly used methods for establishing reliability include Cronbach's Alpha and Composite Reliability (CR). All CR statistics for the first-order construct ranged from 0.819 to 0.889 and Cronbach's alpha from.723 to 0.858, which satisfied the requirement because CR and Cronbach's alpha between 0.70 and 0.90 was deemed satisfactory to good (Hair et al., 2018). Hence, based on CR and Cronbach's alpha values, construct reliability is established (**Table 1**).

TABLE 3 | Discriminant validity.

Fornell-lacker criterion							Heterotrait-monotrait ratio (HTMT)					
—	1	2	3	4	5	6	1	2	3	4	5	6
1. E	0.796	—	—	—	—	—	—	—	—	—	—	—
2. M	0.703	0.714	—	—	—	—	0.894	—	—	—	—	—
3. MEB	0.468	0.513	0.689	—	—	—	0.61	0.693		—	—	—
4. O	0.667	0.67	0.495	0.744	—	—	0.865	0.895	0.681	—	—	—
5. SE	0.413	0.4	0.383	0.389	0.708	—	0.484	0.484	0.485	0.481	—	—
6. SLI	0.671	0.696	0.613	0.648	0.443	0.716	0.827	0.887	0.798	0.838	0.504	—

Bold numbers on the diagonal represents the square root of the AVE, of the latent variables.

TABLE 4 | Path coefficients of SE and sub-components.

	Original sample (O)	Sample mean (M)	Standard deviation (Stdev)	T statistics (|O/STDEV|)	*p* values
SE - > E	0.413	0.416	0.03	13.916	0
SE - > M	0.4	0.404	0.032	12.604	0
SE - > MEB	0.383	0.388	0.032	12.065	0
SE - > O	0.389	0.393	0.03	12.951	0
SE - > SLI	0.443	0.447	0.03	14.937	0

Convergent validity: When the AVE value is greater than or equal to the recommended value of 0.50, items converge to measure the underlying construct, and in other words, the construct explains at least 50 percent of the variance of the items that compose the construct (Fornell and Lacker, 1981). Convergent validity results based on the AVE statistics in the current study show that all the AVE values for all constructs were over 0.50, except managing environment and behavior (*AVE* = 0.475). However, as its CR value exceeded 0.70, AVE is not an issue for the managing environment and behavior construct (**Table 2**).

Discriminant validity: When the AVE value of a construct exceeds the shared variance between constructs, discriminant validity is found. Thus, the square root of AVE of a latent variable should be higher than the correlations between the latent variable and all other variables to fulfill the discriminant validity criterion (Fornell and Larcker, 1981; Chin, 2010). In this study, the square root of AVE for each construct was found greater than its correlation with other constructs, providing strong support for the establishment of discriminant validity. Though Fornell and Larcker (1981) criterion is common, the Heterotrait-Monotrait ratio of correlations (HTMT) was recommended as a more reliable method to determine discriminant validity and must not exceed 0.85 or 0.90 (Henseler et al., 2015) (**Table 3**). The results show that all constructs did not exceed the threshold of 0.90. Thus, discriminant validity was established.

Nomological validity: The development of a nomological network is vital to establish construct validity in theory-driven trait research (Cronbach and Meehl, 1955) and social cognitive theories should conform to nomological validity, which refers to the degree to which predictions in a formal theoretical network are confirmed (Hagger, 2017). In other words, the purpose

of developing a nomological network is to predict the relationship of traits with external criteria in advance grounded on an established scientific theory (Hair et al., 2020). When support is found for each hypothesis that comprises the network, e.g., direct effects and the adequacy of model fit with the data is established, the support for nomological validity can be claimed (Hagger et al., 2017). The Bootstrapping test shows that SE has significant correlations with all first-order constructs of SRL strategies, $p = 0.00 < 0.05$ (**Table 4**). Hence, nomological validity was established.

Hierarchical Order Construct of QSRLSLEG

Validating the higher-order construct was performed *via* the bootstrapping technique. SRL strategies in grammar learning was the higher-order construct in the study based on five lower constructs: evaluation, monitoring, managing environment and behavior, objectivity, and seeking and learning information. The outer loadings were found significant, greater than 0.50 for each of the lower constructs (Sarstedt et al., 2019). VIF values were assessed to check collinearity. All VIF values are less than the recommended value of 3 (Hair et al., 2020). Since all criteria were met, the HOC validity was established (**Table 5**).

TABLE 5 | Hierarchical order construct.

HOC	LOCs	Outer loadings	T-statistics	*p*-values	VIF
SRL	E	0.84	21.687	0.000	2.465
—	M	0.813	19.509	0.000	2.623
—	MEB	0.781	17.546	0.000	1.661
—	O	0.791	19.167	0.000	2.258
—	SLI	0.901	29.732	0.000	2.696

TABLE 6 | Path coefficients of SE and SRL.

	Original sample (O)	Sample mean (M)	Standard deviation (Stdev)	T statistics (|O/STDEV|)	p values
SE - > SRL	0.491	0.496	0.029	16.985	0.000

TABLE 7 | Coefficient of Determination (R^2), Predictive Relevance (Q^2), and Effect size (f^2).

	Coefficient of determination R^2	Predictive relevance Q^2	Effect size f^2
E (LOC)	0.171	0.167	0.206
M (LOC)	0.160	0.156	0.190
MEB (LOC)	0.147	0.143	0.172
O (LOC)	0.151	0.148	0.178
SLI (LOC)	0.196	0.192	0.244
SRL (HOC)	0.241	0.229	0.317

a. R^2 score (0.75—substantial, 0.50—moderate, 0.25—weak) (Hair et al., 2018).
b. Q^2 score (value larger than 0 indicates that the exogenous construct have predictive relevance over endogenous constructs) (Geisser, 1975).
c. Effect size (0.02—small effect size, 0.15—medium effect size, 0.35—large effect size) (Cohen, 1988).

Structural Model Assessment

Based on the bootstrapping procedure results, English grammar self-efficacy has a significant relationship on self-regulated learning strategies in grammar learning (Beta = 0.491, t = 16.985, p = 0.00 < 0.01) (**Table 6**).

Psychologists and organizational researchers usually correlate new traits with external criterion/independent index such as academic performance and self-efficacy to establish predictive validity for new traits. Latent variable prediction with PLS Predict shows that SE explains about 24 percent of the variance in SRL strategies, R^2 = 0.241 (**Table 7**). Based on Hair et al. (2018) guidelines, this predictive power was weak. However, the predictive relevance from PLS Predict indicates SE had predictive relevance over sub-components of SRL, ranging from 0.144 to 0.229 > 0, and over the hierarchical order component (SRL), Q^2 = 229 (>0), based on Geisser (1975) criterion. Also, the predictive effect size of SE was medium over sub-components of SRL with f^2 ranging from 0.172 to 0.244 and also moderate over the second-order construct, SRL (f^2 = 0.32), based on Cohen (1988) guidelines.

DISCUSSION AND CONCLUSION

Vietnamese students' lack of SRL strategies in language learning, specifically in learning grammar, is a prominent issue that needs to be addressed because students often use cognitive strategies (i.e., memorization, rehearsal, and over-practicing) as their main strategies to learn English grammar and also make widespread grammar errors (Dan, 2008). The major contribution of the study was to validate a questionnaire that could be used to measure students' SRL in learning grammar and an instrument to measure their English grammar SE. Both content and construct validity were investigated to ensure the validity of these two instruments. The 24 items of the Questionnaire of Self-regulated Learning Strategies in Learning English Grammar (QSRLSLEG) measure five distinct dimensions of SRL: evaluation (4 items), objectivity (4 items), monitoring (5 items), seeking and learning information (6 items), which can have a collective contribution towards the SRL engagement in learning English grammar. Based on the reliability information, the reliability coefficients of the QSRLSLEG and its subscales exceeded 0.70. Also, its overall AVE and the AVE values of its subscales were over 0.50, except managing environment and behavior (0.470). The HTMT values for all subscales were also below the threshold value of 0.90. Hence, the reflective and formative model of QSRLSLEG had convergent validity, construct reliability, and discriminant validity. Similarly, the QEGSE, which comprises eight items, was also reliable (r = 0.858 > 0.70) and valid (AVE = 0.502 > 0.50).

Moreover, the study expands on the SRL model by constructing an instrument that can measure students' self-regulation in learning grammar and a tool to measure students' English grammar SE. It proves that the SRL model can be widely adapted for diverse academic subjects and that social cognitive theory serves as a robust theoretical framework for the development of an instrument to measure self-regulation or SRL. The developed instruments have the following attributes: a) being developed on the premise of the socio-cognitive theoretical framework and SRL model; b) capturing different categories of SRL strategies that students are expected to exhibit when learning English grammar in a foreign language context such as cognitive and metacognitive self-regulation (e.g., monitoring, evaluating, inferencing, and summarizing) and other self-regulatory behaviors; c) having excellent

psychometric properties because the items were adapted from validated instruments d) proving predictive relevance of SE on SRL strategies. Therefore, the newly developed instruments are suitable for measuring psychological processes such as SE and SRL in learning grammar among Vietnamese high school students.

Consistent with findings from previous studies into good language learners' employment of learning strategies (e.g., O'Malley et al., 1985; Rubin, 1975; Stern, 1975; Takeuchi, 2003), the instrument contains a substantial number of items that represent the strategies that good language learners often employ, such as cognitive and metacognitive strategies, echoed in Pawlak (2009) GLSI. However, contrary to Pawlak (2009) GLSI, the instrument QSRLSLEG does not differentiate strategies that are typical of explicit and implicit modes of grammar instruction as the SRL strategies should be applicable for all situations irrespective of the mode of instruction, e.g., focus on forms versus focus on form instruction. It is because an SRL strategy instrument needs to incorporate the dynamic features of the behavioral factor, as displayed within the three-cycle feedback loop of Bandura (1986) social cognitive learning model and the behavioral self-regulation to execute tasks of Zimmerman and Moylan (2009) SRL model. Also, congruent with findings from previous studies about the relationship between self-efficacy and self-regulated learning strategies (Kim et al., 2015; Kaiser et al., 2020; Lim and Yeo, 2021), this study proved that English grammar SE had a significant relationship with and predictive relevance on SRL strategies in English grammar learning.

To top it all off, high school English teachers can use the developed instrument to either assess their students' SRL strategy use and SE to inform their teaching practices or use them as reliable and valid assessment tools to evaluate the success of the grammar strategy intervention. To succeed in grammar learning, EFL learners need to employ various SRL strategies rather than simply memorization strategies. Thus, EFL teachers can refer to the list of strategies in the *QSRLSLEG*, and design appropriate tasks to help their students practice self-regulated grammar learning, especially the metacognitive strategies to expedite their grammar learning. For EFL students who have never been trained with grammar learning strategies or who have not been familiar with SRL strategies, the instrument could be used as a checklist but would be better off if used in training intervention so that teachers can help students practice the strategies listed in the inventory. Moreover, for researchers, QSRLSLEG can be used as a reliable and valid tool to examine how associated factors relate to EFL students' use of SRL strategies in learning English grammar, such as mode of grammar instructions, and learning styles and QEGSE to predict grammar performance.

In conclusion, the 24-item QSRLSLEG and 8-item QEGSE have face, content, and construct validity as well as reliability and are thus suitable for measuring high school students' self-regulated learning in learning English grammar and English grammar SE, which have been deemed a positive psychological construct. As a result, these two instruments can serve as useful tools for researchers and teachers to investigate important aspects of students' SRL engagement and SE during grammar learning. The information obtained from these two tools could be beneficial for high school teachers in refining their teaching practices to provide chances for their students to develop

SRL strategies and SE. Moreover, the questionnaire can be applied not only to high school students but also to any group of students where the learning goals and learning focus of the foreign language are shared. For foreign language researchers, the use of these questionnaires may offer a more comprehensive understanding of the generalizability of the SRL model from which SRL strategies and SE can be applied to both language skills and aspects in the foreign language classroom. QSRLSLEG and QEGSE serve as essential reference sources for future studies and can be a valuable contribution to the currently available taxonomies because these instruments focus specifically on the self-regulatory aspects of English grammar learning among EFL students. Despite these merits, the QSRLSLEG does not include affective factors, unlike the most recent grammar strategy inventory, i.e., Pawlak (2009, 2018c) GLSI. Thus, future studies should consider this factor and continue to improve the QSRLSLEG. Also, an exciting direction for further work is to validate the two instruments across different EFL populations within the Asian context where learning grammar is of top priority in language classrooms.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article and **Supplementary Material**, further inquiries can be directed to the corresponding author.

ETHICS STATEMENT

The study involved human participants and was reviewed and approved by the Research Ethics Board at Universiti Putra Malaysia (ID number: JKEUPM-2020-056). Written informed consent to participate in this study was provided by the participants' legal guardian.

AUTHOR CONTRIBUTIONS

Author TNN conceptualized research, wrote the article, collected data, analyzed data, and prepared the manuscript to submit it to Frontiers in Education.

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REFERENCES

Aghaie, R., and Zhang, L. J. (2012). Effects of Explicit Instruction in Cognitive and Metacognitive reading Strategies on Iranian EFL Students' reading Performance and Strategy Transfer. *Instr. Sci.* 40 (6), 1063–1081. doi:10.1007/s11251-011-9202-5

An, Z., Gan, Z., and Wang, C. (2020). Profiling Chinese EFL Students' Technology-Based Self-Regulated English Learning Strategies. *Plos One* 15 (10), e0240094. doi:10.1371/journal.pone.0240094

Anderson, N. J. (2005). "L2 Learning Strategies," in *Handbook of Research in Second Language Teaching and Learning*. Editor E. Hinkel (Lawrence Erlbaum), 781–796. doi:10.4324/9781410612700-56

Bai, B., and Guo, W. (2018). Influences of Self-Regulated Learning Strategy Use on Self-Efficacy in Primary School Students' English Writing in Hong Kong. *Reading Writing Q.* 34 (6), 523–536. doi:10.1080/10573569.2018.1499058

Bai, B., and Wang, J. (2021). Hong Kong Secondary Students' Self-Regulated Learning Strategy Use and English Writing: Influences of Motivational Beliefs. *System* 96, 102404. doi:10.1016/j.system.2020.102404

Bandura, A. (2006c). "Guide for Constructing Self-Efficacy Scales," in *Self-Efficacy Beliefs of Adolescents*. Editors F. Pajares and T. Urdan (Greenwich, Connecticut: Information Age Publishing), 5, 307–337.

Bandura, A. (1989a). "Social Cognitive Theory," in *Annals of Child Development*. Editor R. Vasta (Greenwich, Connecticut: Six Theories of Child DevelopmentJAI Press), Vol. 6, 1–60.

Bandura, A. (1986). *Social Foundations of Thought and Action*. Englewood Cliffs, NJ: Prentice Hall.

Barnard, L., Lan, W. Y., To, Y. M., Paton, V. O., and Lai, S.-L. (2009). Measuring Self-Regulation in Online and Blended Learning Environments. *Internet Higher Educ.* 12 (1). doi:10.1080/10573569.2018.149905810.1016/j.iheduc.2008.10.005

Bong, M. (2013). "Self-efficacy," in *International Guide to Student Achievement*. Editors J. Hattie and E. M. Anderman (New York, NY: Routledge), 64–66.

Brown, J. D., Robson, G., and Rosenkjar, P. R. (2001). "Personality, Motivation, Anxiety, Strategies, and Language Proficiency of Japanese Students," in *Motivation and Second Language Acquisition*. Editors Z. Dornyei and R. W. Schmidt (Honolulu, HI: University of Hawaii, Second Language Teaching and Curriculum Center), 361–398.

Chen, X., Wang, C., and Kim, D. H. (2020). Self-Regulated Learning Strategy Profiles Among English as a Foreign Language Learners. *Tesol Q.* 54 (1), 234–251. doi:10.1002/tesq.540

Chin, W. W. (2010). "How to Write up and Report Pls Analyses," in *Handbook of Partial Least Squares: Concepts, Methods and Applications*. Editors V. Esposito Vinzi, W. W. Chin, J. Henseler, and H. Wang (Springer), 655–690. doi:10.1007/978-3-540-32827-8_29

Chiu, M. M., Chow, B. W.-Y., and Mcbride-Chang, C. (2007). Universals and Specifics in Learning Strategies: Explaining Adolescent Mathematics, Science, and reading Achievement across 34 Countries. *Learn. Individual Differences* 17 (4), 344–365. doi:10.1016/j.lindif.2007.03.007

Cho, Y. A., and Kim, Y. (2019). The Relationship between Self-Efficacy Beliefs and Self-Regulated Learning Strategies in Korean EFL Learners. *Linguistic Assoc. Korea J.* 27 (3), 53–74. doi:10.24303/lakdoi.2019.27.3.53

Chu, L., Li, P.-H., and Yu, M.-N. (2020). The Longitudinal Effect of Children's Self-Regulated Learning on reading Habits and Well-Being. *Int. J. Educ. Res.* 104, 101673. doi:10.1016/j.ijer.2020.101673

Chularut, P., and DeBacker, T. K. (2004). The Influence of Concept Mapping on Achievement, Self-Regulation, and Self-Efficacy in Students of English as a Second Language. *Contemp. Educ. Psychol.* 29 (3), 248–263. doi:10.1016/j.cedpsych.2003.09.001

Cleary, T. J. (2006). The Development and Validation of the Self-Regulation Strategy Inventory-Self-Report. *J. Sch. Psychol.* 44 (4), 307–322. doi:10.1016/j.jsp.2006.05.002

Cohen, A. D., Pinilla-Herrera, A., Thompson, J. R., and Witzig, L. E. (2011). Communicating Grammatically: Evaluating a Learner Strategy Website for Spanish Grammar. *Calico J.* 29 (1), 145–172. doi:10.11139/cj.29.1.145-172

Cohen, A. D., and Weaver, S. J. (2004). *Styles and Strategies-Based Instruction: A Teachers' Guide*. Minneapolis, MN: Center for Advanced Research on Language Acquisition, University of Minnesota.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioural Sciences*. Laurence Erlbaum Associates. Inc.

Collins, S. J., and Bissell, K. L. (2004). Confidence and Competence Among Community College Students: Self-Efficacy and Performance in Grammar. *Community Coll. J. Res. Pract.* 28 (8), 663–675. doi:10.1080/10668920390254663

Coltman, T., Devinney, T. M., Midgley, D. F., and Venaik, S. (2008). Formative versus Reflective Measurement Models: Two Applications of Formative Measurement. *J. Business Res.* 61 (12), 1250–1262. doi:10.1016/j.jbusres.2008.01.013

Cronbach, L. J., and Meehl, P. E. (1955). Construct Validity in Psychological Tests. *Psychol. Bull.* 52 (4), 281–302. doi:10.1037/h0040957

Dan, V. D. (2008). *Some Vietnamese Students' Problems with English Grammar: A Preliminary Study*, 37. Honolulu, HI: HPU TESL Working Paper Series.

De Boer, H., Donker, A. S., Kostons, D. D. N. M., and van der Werf, G. P. C. (2018). Long-term Effects of Metacognitive Strategy Instruction on Student Academic Performance: A Meta-Analysis. *Educ. Res. Rev.* 24, 98–115. doi:10.1016/j.edurev.2018.03.002

Dent, A. L., and Koenka, A. C. (2016). The Relation between Self-Regulated Learning and Academic Achievement across Childhood and Adolescence: A Meta-Analysis. *Educ. Psychol. Rev.* 28 (3), 425–474. doi:10.1007/s10648-015-9320-8

DiBenedetto, M. K. (2018). *Connecting Self-Regulated Learning and Performance with Instruction across High School Content Areas*. Dordrecht, Netherlands: Springer.

Dignath, C., Buettner, G., and Langfeldt, H.-P. (2008). How Can Primary School Students Learn Self-Regulated Learning Strategies Most Effectively. *Educ. Res. Rev.* 3 (2), 101–129. doi:10.1016/j.edurev.2008.02.003

Dignath, C., and Büttner, G. (2008). Components of Fostering Self-Regulated Learning Among Students. A Meta-Analysis on Intervention Studies at Primary and Secondary School Level. *Metacognition Learn.* 3 (3), 231–264. doi:10.1007/s11409-008-9029-x

Dinsmore, D. L., Alexander, P. A., and Loughlin, S. M. (2008). Focusing the Conceptual Lens on Metacognition, Self-Regulation, and Self-Regulated Learning. *Educ. Psychol. Rev.* 20 (4), 391–409. doi:10.1007/s10648-008-9083-6

Do, K. A. (2013). The Current State of the Art in the Teaching of Grammar at Vietnamese High Schools. *Lang. India* 13 (3). Available at http://www.languageinindia.com/march2013/dokieuanhenglishvietnam.pdf.

Dong, J. (2016). A Dynamic Systems Theory Approach to Development of Listening Strategy Use and Listening Performance. *System* 63, 149–165. doi:10.1016/j.system.2016.10.004

Donker, A. S., De Boer, H., Kostons, D., Dignath van Ewijk, C. C., and van der Werf, M. P. C. (2014). Effectiveness of Learning Strategy Instruction on Academic Performance: A Meta-Analysis. *Educ. Res. Rev.* 11, 1–26. doi:10.1016/j.edurev.2013.11.002

Dörnyei, Z. (2005). *The Psychology of the Language Learner: Individual Differences in Second Language Acquisition*. Mahwah, NJ: Routledge.

Duong, T. (2017). Can You Get 10/10 on Vietnam's English High School Exam? VnExpress International – Latest News, Business, Travel and Analysis from Vietnam. Available at: https://e.vnexpress.net/news/news/can-you-get-10-10-on-vietnam-s-english-high-school-exam-3612288.html.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.801570/full#supplementary-material

Eaton, M. J., and Dembo, M. H. (1997). Differences in the Motivational Beliefs of Asian American and Non-asian Students. *J. Educ. Psychol.* 89 (3), 433–440. doi:10.1037/0022-0663.89.3.433

Efklides, A. (2011a). Interactions of Metacognition with Motivation and Affect in Self-Regulated Learning: The MASRL Model. *Educ. Psychol.* 46 (1), 6–25. doi:10.1080/00461520.2011.538645

Efklides, A. (2008). Metacognition. *Eur. Psychol.* 13 (4), 277–287. doi:10.1027/1016-9040.13.4.277

ElAdl, A. M., and Polpol, Y. S. (2020). The Effect of Self-Regulated Learning Strategies on Developing Creative Problem Solving and Academic Self-Efficacy Among Intellectually superior High School Students. *Int. J. Psycho-Educational Sci.* 9 (1), 97–106. doi:10.12973/eu-jer.9.3.1167

Erlich, R. J., and Russ-Eft, D. (2011). Applying Social Cognitive Theory to Academic Advising to Assess Student Learning Outcomes. *NACADA J.* 31 (2), 5–15. doi:10.12930/0271-9517-31.2.5

European Council (2002). Council Resolution of 27 June 2002 on Lifelong Learning. *Official J. Eur. Communities* 9, 1–3.

Fard, F. E. (2010). "The Effect of Cognitive and Metacognitive Strategy-Based Grammar Instruction on Intermediate Iranian EFL Learners' Development of Structural Knowledge," in *The New Decade and (2nd) FL Teaching: The Initial Phase*. Editor R. Reinelt (Matsuyama, Japan: Rudolf Reinelt Research Laboratory EU Matsuyama), 31–57.

Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*. California: Sage.

Flavell, J. H. (1979). Metacognition and Cognitive Monitoring: A New Area of Cognitive-Developmental Inquiry. *Am. Psychol.* 34 (10), 906–911. doi:10.1037/0003-066x.34.10.906

Fornell, C., and Bookstein, F. L. (1982). Two Structural Equation Models: LISREL and PLS Applied to Consumer Exit-Voice Theory. *J. Marketing Res.* 19 (4), 440–452. doi:10.2307/315171810.1177/002224378201900406

Fornell, C., and Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Marketing Res.* 18 (1), 39–50. doi:10.2307/3151312

Fraenkel, J. R., Wallen, N. E., and Hyun, H. H. (2011). *How to Design and Evaluate Research in Education*. New York, NY: McGraw-Hill Humanities.

Geisser, S. (1975). The Predictive Sample Reuse Method with Applications. *J. Am. Stat. Assoc.* 70 (350), 320–328. doi:10.1080/01621459.1975.10479865

Gimeno, V. (2002). Grammar Learning through Strategy Training: A Classroom Study on Learning Conditionals through Metacognitive and Cognitive Strategy Training *[Doctoral Dissertation*. Valencia, Spain: Universitat de València. Available at: https://roderic.uv.es/handle/10550/15249.

Gorlewski, J., and Annable, J. (2012). Research for the Classroom: Becoming Self-Editors: Using Metacognition to Improve Students' Grammar Knowledge. *English J.* 101 (3), 89–91. Available at: https://www.jstor.org/stable/41415461.

Graham, S., Harris, K. R., and Mason, L. (2005). Improving the Writing Performance, Knowledge, and Self-Efficacy of Struggling Young Writers: The Effects of Self-Regulated Strategy Development. *Contemp. Educ. Psychol.* 30 (2), 207–241. doi:10.1016/j.cedpsych.2004.08.001

Hagger, M. S., Gucciardi, D. F., and Chatzisarantis, N. L. D. (2017). On Nomological Validity and Auxiliary Assumptions: the Importance of Simultaneously Testing Effects in Social Cognitive Theories Applied to Health Behavior and Some Guidelines. *Front. Psychol.* 8, 1933. doi:10.3389/fpsyg.2017.01933

Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2018). *Multivariate Data Analysis*. London: Cengage Learning EMEA.

Hair, J. F., Howard, M. C., and Nitzl, C. (2020). Assessing Measurement Model Quality in PLS-SEM Using Confirmatory Composite Analysis. *J. Business Res.* 109, 101–110. doi:10.1016/j.jbusres.2019.11.069

Hair, J. F., Jr, Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage publications.

Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., et al. (2014). Common Beliefs and Reality about PLS. *Organizational Res. Methods* 17 (2), 182–209. doi:10.1177/1094428114526928

Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation

Modeling. *J. Acad. Mark. Sci.* 43 (1), 115–135. doi:10.1007/s11747-014-0403-8

Horwitz, E. K. (1999). Cultural and Situational Influences on Foreign Language Learners' Beliefs about Language Learning: a Review of BALLI Studies. *System* 27 (4), 557–576. doi:10.1016/s0346-251x(99)00050-0

Howard, B. C., McGee, S., Shia, R., and Hong, N. S. (2000). Metacognitive Self-Regulation And Problem-Solving: Expanding The Theory Base through Factor Analysis *[Paper Presentation]*. New Orleans, LA: Annual Meeting of the American Educational Research Association.

Jarvis, C. B., MacKenzie, S. B., and Podsakoff, P. M. (2003). A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research. *J. Consum Res.* 30 (2), 199–218. doi:10.1086/376806

Jun Zhang, L. (2001). Awareness in Reading: EFL Students' Metacognitive Knowledge of Reading Strategies in an Acquisition-Poor Environment. *Lang. Awareness* 10 (4), 268–288. doi:10.1080/09658410108667039

Kaiser, V., Reppold, C. T., Hutz, C. S., and Almeida, L. S. (2020). Contributions of Positive Psychology in Self-Regulated Learning: a Study with Brazilian Undergraduate Students. *Front. Psychol.* 10, 2980. doi:10.3389/fpsyg.2019.02980

Kholili, A. (2020). Potential Relationship between Self-Efficacy Beliefs and Proficiency in Grammar Among Tertiary EFL Learners. *Eltf* 9 (1), 38–44. doi:10.15294/elt.v9i1.38404

Kim, D.-H., Wang, C., Ahn, H. S., and Bong, M. (2015). English Language Learners' Self-Efficacy Profiles and Relationship with Self-Regulated Learning Strategies. *Learn. Individual Differences* 38, 136–142. doi:10.1016/j.lindif.2015.01.016

Kim, S. S., and Nor, M. M. (2019). The Effects of Self-Regulated Learning Strategies on Preschool Children's Self-Efficacy and Performance in Early Writing. *Ije* 11 (2), 99–108. doi:10.17509/ije.v11i2.14504

Le, H. (2019). Điểm Trung Bình Môn Tiếng Anh THPT Quốc Gia 2019 Cao Hơn Năm Ngoái. Kenh14.Vn. Available at: https://kenh14.vn/diem-trung-binh-mon-tieng-anh-thpt-quoc-gia-2019-cao-hon-nam-ngoai-20190713214529616.chn.

Lem, N. C. (2019). Self-regulated Learning and its Relation to Vietnamese Efl Learners' L2 Listening Achievement. *Fs* 35 (4). doi:10.25073/2525-2445/vnufs.4395

Li, J. (2020). Development and Validation of Second Language Online Reading Strategies Inventory. *Comput. Educ.* 145, 103733. doi:10.1016/j.compedu.2019.103733

Lim, S. L., and Yeo, K. J. (2021). A Systematic Review of the Relationship between Motivational Constructs and Self-Regulated Learning. *Ijere* 10 (1), 330–335. doi:10.11591/ijere.v10i1.21006

Miller, R. B., Greene, B. A., Montalvo, G. P., Ravindran, B., and Nichols, J. D. (1996). Engagement in Academic Work: The Role of Learning Goals, Future Consequences, Pleasing Others, and Perceived Ability. *Contemp. Educ. Psychol.* 21 (4), 388–422. doi:10.1006/ceps.1996.0028

Moshman, D. (1982). Exogenous, Endogenous, and Dialectical Constructivism. *Develop. Rev.* 2 (4), 371–384. doi:10.1016/0273-2297(82)90019-3

Moshman, D. (2018a). Metacognitive Theories Revisited. *Educ. Psychol. Rev.* 30 (2), 599–606. doi:10.1007/s10648-017-9413-7

Multon, K. D., Brown, S. D., and Lent, R. W. (1991). Relation of Self-Efficacy Beliefs to Academic Outcomes: A Meta-Analytic Investigation. *J. Couns. Psychol.* 38 (1), 30–38. doi:10.1037/0022-0167.38.1.30

Mustapha, N. H., and Mustapha, N. F. (2017). Grammar Efficacy and Grammar Performance: An Exploratory Study on Arabic Learners. *Mediterr. J. Soc. Sci.* 8 (4), 123–128. doi:10.1515/mjss-2017-0011

Nguyen, V. T. (2016). Exploring Language Learning Strategies of Vietnamese University English and Non-English Majors. *LEiA* 7 (1), 4–19. doi:10.5746/leia/16/v7/i1/a02/nguyen

Nyikos, M., and Oxford, R. (1993). A Factor Analytic Study of Language-Learning Strategy Use: Interpretations from Information-Processing Theory and Social Psychology. *Mod. Lang. J.* 77 (1), 11–22. doi:10.1111/j.1540-4781.1993.tb01940.x

O'Malley, J. M., and Chamot, A. U. (1990). *Learning Strategies in Second Language Acquisition*. Cambridge University Press.

Oxford, R. L. (1986). *Development and Psychometric Testing of the Strategy Inventory for Language Learning (SILL)*. Crossroads, VA: Kinton Inc Bailey.

Oxford, R. L. (1990a). *Language Learning Strategies: What Every Teacher Should Know*, 210. Boston, MA: Heinle & Heinle Boston.

Oxford, R. L., Lee, K. R., and Park, G. (2007). "The Second Cinderella and Beyond", *Oxford Applied Linguistics: Language Learner Strategies*. Editors A. D. Cohen and E. Macaro (Oxford, UK: Oxford University Press), 117–139.

Oxford, R. L. (2016b). *Teaching and Researching Language Learning Strategies: Self-Regulation in Context*. Taylor & Francis.

Panadero, E. (2017). A Review of Self-Regulated Learning: Six Models and Four Directions for Research. *Front. Psychol.* 8, 422. doi:10.3389/fpsyg.2017.00422

Pawlak, M. (2020d). Grammar Learning Strategies as a Key to Mastering Second Language Grammar: A Research Agenda. *Lang. Teach.* 53 (3), 358–370. doi:10.1017/s0261444819000314

Pawlak, M. (2018c). Grammar Learning Strategy Inventory (GLSI): Another Look. *Ssllt* 8 (2), 351–379. doi:10.14746/ssllt.2018.8.2.8

Pawlak, M. (2009). *Investigating Grammar Learning Strategies: In Search of Appropriate Research Tools*. [Paper presentation]. 19th Conference of the European Second Language Association. Cork.

Pawlak, M. (2011a). "Investigating The Link between the Use of Grammar Learning Strategies and Language Attainment [Paper Presentation]," in International Conference on Topics in Applied Linguistics (Opole.

Pawlak, M. (2013b). "Researching Grammar Learning Strategies: Combining the Macro- and Micro-perspective," in *Perspectives on Foreign Language Learning*. Editors L. Salski, W. Szubko-Sitarek, and J. Majer (Łódź, Poland: University of Łódź Press), 193–211. doi:10.18778/7969-032-9.15

Perry, N. E. (1998). Young Children's Self-Regulated Learning and Contexts that Support it. *J. Educ. Psychol.* 90 (4), 715–729. doi:10.1037/0022-0663.90.4.715

Phung, H., Tran, N., and Hoang, D. (2021). Empowering Students with Authentic Tasks to Learn English beyond the Classroom: A Club-Based Model. *Innovation Lang. Learn. Teach.* 0 (0), 1–11. doi:10.1080/17501229.2021.1998068

Purpura, J. E. (1999). *Learner Strategy Use and Performance on Language Tests: A Structural Equation Modeling Approach*, Cambridge University Press.

Rose, H., Briggs, J. G., Boggs, J. A., Sergio, L., and Ivanova-Slavianskaia, N. (2018). A Systematic Review of Language Learner Strategy Research in the Face of Self-Regulation. *System* 72, 151–163. doi:10.1016/j.system.2017.12.002

Rose, H. (2012). Reconceptualizing Strategic Learning in the Face of Self-Regulation: Throwing Language Learning Strategies Out with the Bathwater. *Appl. Linguistics* 33 (1), 92–98. doi:10.1093/applin/amr045

Rubin, J. (2005a). "The Expert Language Learner: A Review of Good Language Learner Studies and Learner Strategies," in *Expertise in Second Language Learning and Teaching*. Editors A. Wenden and J. Rubin (Springer), 37–63. doi:10.1057/9780230523470_3

Rubin, J. (1975). What the "Good Language Learner" Can Teach Us. *TESOL Q.* 9 (1), 41–51. doi:10.2307/3586011

Salili, F., Chiu, C.-y., and Lai, S. (2001). "The Influence of Culture and Context on Students' Motivational Orientation and Performance," in *Student Motivation*. Editors F. Salili, C. Y. Chiu, and Y. Y. Hong (Springer), 221–247. doi:10.1007/978-1-4615-1273-8_11

Sarstedt, M., Hair, J. F., Cheah, J.-H., Becker, J.-M., and Ringle, C. M. (2019). How to Specify, Estimate, and Validate Higher-Order Constructs in PLS-SEM. *Australas. Marketing J.* 27 (3), 197–211. doi:10.1016/j.ausmj.2019.05.003

Schunk, D. H., and Zimmerman, B. J. (1998). *Self-regulated Learning: From Teaching to Self-Reflective Practice*. New York, NY: Guilford Press.

Schwarzer, R., Born, A., Iwawaki, S., and Lee, Y.-M. (1997). The Assessment of Optimistic Self-Beliefs: Comparison of the Chinese, Indonesian, Japanese, and Korean Versions of the General Self-Efficacy Scale. *Psychologia: Int. J. Psychol. Orient* 40 (1), 1–13.

Sharma, P. N., Shmueli, G., Sarstedt, M., Danks, N., and Ray, S. (2018). Prediction-Oriented Model Selection in Partial Least Squares Path Modeling. *Decis. Sci.* 52 (3), 567–607. doi:10.1111/deci.12329

Stern, H. H. (1975). What Can We Learn from the Good Language Learner. *Can. Mod. Lang. Rev.* 31 (4), 304–319. doi:10.3138/cmlr.31.4.304

Su, Y., Zheng, C., Liang, J.-C., and Tsai, C.-C. (2018). Examining the Relationship between English Language Learners' Online Self-Regulation and Their Self-Efficacy. *Australas. J. Educ. Techn.* 34 (3), 105–121. doi:10.14742/ajet.3548

Sun, T., and Wang, C. (2020). College Students' Writing Self-Efficacy and Writing Self-Regulated Learning Strategies in Learning English as a Foreign Language. *System* 90, 102221. doi:10.1016/j.system.2020.102221

Supakorn, P., Feng, M., and Limmun, W. (2018). Strategies for Better Learning of English Grammar: Chinese vs. Thais. *English Language Teaching* 11 (3), 24–39. doi:10.5539/elt.v11n3p24

Takeuchi, O. (2019a). "Language Learning Strategies: Insights from the Past and Directions for the Future," in *Second Handbook of English Language Teaching*. Editor X. Gao (Cham, Switzerland: Springer International Publishing), 683–702. doi:10.1007/978-3-030-02899-2_37

Takeuchi, O. (2003). What Can We Learn from Good Foreign Language Learners? A Qualitative Study in the Japanese Foreign Language Context. *System* 31 (3), 385–392. doi:10.1016/s0346-251x(03)00049-6

Teng, L. S., and Zhang, L. J. (2020). Empowering Learners in the Second/foreign Language Classroom: Can Self-Regulated Learning Strategies-Based Writing Instruction Make a Difference. *J. Second Lang. Writing* 48, 100701. doi:10.1016/j.jslw.2019.100701

Thuy, N. T. B. (2018). Reading Strategies Used by Vietnamese EFL and ESL university Students. *Fs* 34 (2). doi:10.25073/2525-2445/vnufs.4250

Tise, J., Follmer, D. J., and Sperling, R. A. (2019). A Review of the Self-Regulation Strategy Inventory-Self-Report (SRSI-SR). *Psych* 10, 305–319. doi:10.4236/psych.2019.103022

Tragant, E., Thompson, M. S., and Victori, M. (2013). Understanding Foreign Language Learning Strategies: A Validation Study. *System* 41 (1), 95–108. doi:10.1016/j.system.2013.01.007

Tran, T. Q., Phan, T. T. N., and Tran, T. N. P. (2021). Vietnamese EFL High School Students' Use of Self-Regulated Language Learning Strategies for Project-Based Learning. *Int. J. Instruction* 14 (1), 459–474. doi:10.29333/iji.2021.14127a

Truong, T. N. N., Noordin, N., Ismail, L., and Yahya, Y. (2022). Revisiting Views of Grammar and Grammar Learning Strategy Use: A Multiple Case Study in Vietnam. (Under Review).

Truong, T. N. N., and Wang, C. (2019). Understanding Vietnamese College Students' Self-Efficacy Beliefs in Learning English as a Foreign Language. *System* 84, 123–132. doi:10.1016/j.system.2019.06.007

Tseng, W.-T., Dörnyei, Z., and Schmitt, N. (2006). A New Approach to Assessing Strategic Learning: The Case of Self-Regulation in Vocabulary Acquisition. *Appl. Linguistics* 27 (1), 78–102. doi:10.1016/j.system.2013.01.00710.1093/applin/ami046

Wang, C., and Bai, B. (2017). Validating the Instruments to Measure ESL/EFL Learners' Self-Efficacy Beliefs and Self-Regulated Learning Strategies. *Tesol Q.* 51 (4), 931–947. doi:10.1002/tesq.355

Wang, C., Bong, M., and Ahn, H. S. (2013). Korean College Students' Self-Regulated Learning Strategies and Self-Efficacy Beliefs in Learning English as a Foreign Language. *Asian EFL J.* 15 (3), 81–112. Available at https://www.scopus.com/record/display.uri?eid=2-s2.0-84886053191&origin=inward&txGid=076106a21d9b85b40f6d05fc9bfc3896.

Wang, C., and Sun, T. (2020). Relationship between Self-Efficacy and Language Proficiency: A Meta-Analysis. *System* 95, 102366. doi:10.1016/j.system.2020.102366

Wenden, A. (1987). Metacognition: An Expanded View on the Cognitive Abilities of L2 Learners. *Lang. Learn.* 37 (4), 573–597. doi:10.1111/j.1467-1770.1987.tb00585

Zhang, J. L., and Qin, T. L. (2018). "Validating a Questionnaire on EFL Writers' Metacognitive Awareness of Writing Strategies in Multimedia Environments", *Metacognition in Language Learning and Teaching*. Editors A. Haukås, C. Bjørke, and M. Dypedahl. (New York, NY: Routledge), 157–178.

Zhang, L., Goh, C. C. M., and Kunnan, A. J. (2014). Analysis of Test Takers' Metacognitive and Cognitive Strategy Use and EFL Reading Test Performance:A Multi-Sample SEM Approach. *Lang. Assess. Q.* 11 (1), 76–102. doi:10.1080/15434303.2013.853770

Zimmerman, B. J. (1998b). "Developing Self-Fulfilling Cycles of Academic Regulation: An Analysis of Exemplary Instructional Models," in *Self-Regulated Learning: From Teaching to Self-Reflective Practice*. Editors D. H. Schunk and B. J. Zimmerman (New York, NY: The Guildford Press), 160–172.

Zimmerman, B. J. (2000c). "Attaining Self-Regulation," in *Handbook of Self-Regulation*. Editors M. Boekaerts, P. R. Pintrich, and M. Zeidner (Elsevier), 13–39. doi:10.1016/b978-012109890-2/50031-7

Zimmerman, B. J. (1986). Becoming a Self-Regulated Learner: Which Are the Key Subprocesses. *Contemp. Educ. Psychol.* 11 (4), 307–313. doi:10.1016/0361-476x(86)90027-5

Zimmerman, B. J. (1989a). "Models of Self-Regulated Learning and Academic Achievement," in *Self-regulated Learning and Academic Achievement*. Editors B. J. Zimmerman and D. H. Schrunk (New York, NY: Springer), 1–25. doi:10.1007/978-1-4612-3618-4_1

Zimmerman, B. J., and Moylan, A. R. (2009). "Self-regulation: Where Metacognition and Motivation Intersect," in *Handbook of Metacognition in Education*. Editors M. Boekaerts, P. R. Pintrich, and M. Zeidner (New York, NY: Routledge), 311–328.

Zimmerman, B. J., and Pons, M. M. (1986). Development of a Structured Interview for Assessing Student Use of Self-Regulated Learning Strategies. *Am. Educ. Res. J.* 23 (4), 614–628. doi:10.3102/00028312023004614

Zimmerman, B. J., and Schunk, D. H. (2001). *Self-regulated Learning and Academic Achievement: Theoretical Perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.

Zimmerman, B. J., and Schunk, D. H. (2012a). *Self-regulated Learning and Academic Achievement: Theory, Research, and Practice*. Springer Science & Business Media.