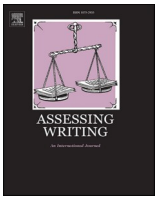
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Assessing self-regulatory writing strategies and their predictive effects on young EFL learners' writing performance

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ABSTRACT

This paper reports findings from two empirical studies on students' reported use of self-regulatory writing strategies and the relationships with their writing performance in a secondary school English as a foreign language (EFL) context. Study One adopted a factorial design using exploratory and confirmatory factor analysis to validate the inferences and uses of a Self-Regulatory Writing Strategy Questionnaire; Study Two explored learner individual differences in developing self-regulatory writing strategies and the predictive effects of these strategies on students' writing performance. Participants were two convenience samples of 669 and 239 students, who were young EFL learners in junior secondary schools in China. Results provided evidence of the construct validity of responses to the questionnaire. Students in higher grade levels reported more frequent use of self-regulatory writing strategies than those in lower grade levels, and female students reported using self-regulatory writing strategies more than male students. The six strategy factors (i.e., writing planning, goal-oriented monitoring, goal-oriented evaluation, emotional control, memorization, and metacognitive judgment) each had significant predictive effects on secondary school students' writing performance. These findings suggest the importance of self-regulatory writing strategies to young learners' writing performance.

1. Introduction

Assessment of students' use of writing strategies is more popular now than ever in English as a foreign language (EFL) context. Writing effectively is a critical communication tool for conveying thoughts and opinions, describing ideas and events, and presenting information (Flower & Hayes, 1980). Students' skills and abilities relating to writing are measured as much as, if not more than, any other skills in today's assessment-driven secondary school education systems. Writing is also considered an important part of EFL secondary school context. Despite the acknowledged importance in developing writing skills in secondary education, writing remains challenging for many learners. The challenge exacerbates when they have to write in EFL context. Research has shown that secondary school student writers in first language (L1) contexts need planning, monitoring, and evaluating strategies for better writing (Olson &

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Land, 2007). This should be the same for EFL student writers, who should be supported to learn how to write through a variety of writing strategies.

Language learners' strategies include specific behaviors or thoughts processes that learners use to guide, facilitate, and solve problems in their language learning process (e.g., Oxford, 2001). In the present study, writing strategies were conceptualized as any series of actions (mental, physical, or both) that student writers need to execute for achieving their writing goals. Given the significant correlation between writing self-efficacy and writing self-regulated learning (SRL) strategies (Sun & Wang, 2020), we also included learners' strategic beliefs, i.e., students' metacognitive judgments of how well they can accomplish a writing task, as a type of strategy. Research has examined how young student writers can improve their writing performance by developing sophisticated approaches to writing such as fostering an awareness of learning to write by regulating self-regulated strategy use and reflecting on possible individual cognitive and behavioral factors that either facilitate or impede writing (Harris, Graham, & Mason, 2006). Writing is not simply a product-oriented process or linguistic knowledge–oriented process; rather, it depends on student writers' understanding, belief, and use of strategies in planning, goal setting, drafting, evaluating, revising, and editing (Hughes, Regan, & Evmenova, 2019). Hence, student writers must learn to apply various writing strategies in learning how to write.

However, students encounter various challenges when learning to write. One obstacle appears to be limited English language input. For some students, writing-related issues can be exacerbated due to a lack of awareness and use of self-regulated writing strategies (Teng & Huang, 2019). In addition, student writers have unique strategy repertoires for learning to write (Palermo & Thomson, 2018) and often possess different levels of "self-initiated thoughts, feelings, and actions" when pursuing writing goals (Zimmerman & Risemberg, 1997, p. 76). This problem may be more emergent today, as teaching writing is commonly product- and exam-oriented in Chinese secondary schools (Teng & Reynolds, 2019). Compared to students who cannot "transform their mental abilities into academic skills" due to a lack of "self-awareness, self-motivation, and behavioral skill" (Zimmerman, 2002, pp. 65–66), young learners who are self-regulated when writing can more easily reflect on their work, process feedback from teachers and peers, and set goals to monitor and evaluate their writing performance (Teng, 2020a). The findings highlight learners' individual differences in understanding and using self-regulatory writing strategies.

However, individual differences in developing self-regulatory writing strategies have yet to be explored in a Chinese secondary school EFL context. As argued by Winne (1996), individual differences in self-regulatory capacity can influence students' metacognitive awareness when selecting, applying, and regulating strategies for learning. For example, a novice student writer may find it more challenging in completing a task, whereas an experienced student writer may be better able to retrieve knowledge from memory to self-regulate their learning. Such learner individual differences are also distinguished by gender, when it comes to using self-regulatory strategies because learners of different genders may possess unique degrees of cognitive tactics or awareness (Yukselturk & Bulut, 2009).

In order to assess writing in secondary schools, it is crucial to understand students' self-regulatory writing strategy use. The present study has twofold purposes. The first purpose was to conceptualize and validate the inferences and uses of a self-regulatory writing strategies questionnaire in a Chinese secondary school context. Although many studies report that a questionnaire can enhance and enrich assessment of students' strategy use, the validity of the tool is not without debate. Much of the debate on questionnaire effectiveness relating to students' writing is reported and discussed in relation to tertiary education contexts (e.g., Hwang & Lee, 2017; Qin & Zhang, 2019; Sun & Wang, 2020; Teng & Zhang, 2016), but there is a lack of experimental investigations into the secondary school context (Teng & Huang, 2019). The second purpose was to explore learner individual differences in the use of self-regulatory writing strategies and the extent to which relevant strategies can predict writing performance. Writing development is in the hands of those who recognize the need to plan and set goals for writing and reflect on the writing process (Sasaki, Mizumoto, & Murakami, 2018). We have thus identified a need to understand student writers' individual differences when developing the self-regulatory writing strategy questionnaire. Complementing previous literature on university students (Ruan, 2014; Teng, 2016; Zhang & Qin, 2018), the present study offers relevant insight on assessing the use of writing strategies and fostering targeted self-regulatory writing strategies among secondary school students.

2. Literature review

2.1. Metacognition, self-regulation, and L2 writing

Metacognition refers to learners' awareness of their own thinking processes and an understanding of the executive processes involved in regulating their cognitive processes (Flavell, 1979). According to Flavell (1999), there are generally two components of metacognition, i.e., knowledge of metacognition and regulation of metacognition. Knowledge of metacognition consists of declarative, procedural, and conditional knowledge (Paris, Cross, & Lipson, 1984). Declarative knowledge, also called content knowledge, encompasses learners' understandings of their skills, performance, intellectual resources, and processing abilities. Procedural knowledge, also called task knowledge, refers to learners' awareness when determining how to execute a task, e.g., the difficulty level of a task. Conditional knowledge, also called strategic knowledge, consists of learners' cognizance in discerning when, where and why to use specific strategies to learn information. Regulation of metacognition refers to one's capacity for conflict resolution, error detection, and inhibitory control by applying skills related to planning, processing, monitoring, and evaluation (Shimamura, 2000). Planning refers to learners' ability to apply appropriate strategies and resources to relevant tasks. Monitoring is learners' ability to keep tabs on their task performance and goal achievement. Evaluating involves learners' ability to assess their regulatory processes and learning outcomes. The regulation function, metacognitive knowledge, and metacognitive experiences also reflect elements of self-regulated learning (Zimmerman & Risemberg, 1997). Fig. 1 presents a conceptual framework for understanding metacognition and self-regulatory

strategies. The framework was also the basis for us to conceptualize the items for the self-regulatory writing strategies.

Zimmerman (2000) proposed a model of the L2 writing process, highlighting the importance of tentative formulations in the writing process, and called for a revision of the writing based on different self-regulatory strategies. According to Harris and Graham (2009), students who lack important strategies for planning, producing, organizing, and revising text may have difficulty in generating ideas and selecting topics. In contrast, those who frequently adopt writing strategies may be able to negotiate the rules and mechanics of writing, focus on the organization, form and features, and evaluate the communication between author and reader (Ma & Teng, 2021).

According to the early writing model proposed by Flower and Hayes (1980), the three key processes of planning, translating, and reviewing operate through a monitoring function that allows access to writing activities. The model includes three main components: "the task environment, the writer's long-term memory, and the writing process" (Flower & Hayes, 1980, p. 369). These three dimensions highlight the need to arrange cognitive actions hierarchically to reflect the recursive nature of writing. To better capture the recursive nature of revision, Bereiter and Scardamalia (1987) expanded the evaluation and revision process into a cognitive model of writing. Various cognitive processes tied to the detection and diagnosis of writing highlight the importance of self-regulatory writing strategies. Based on Bereiter and Scardamalia (1987), Kellogg (1996) proposed a working memory model of writing. He described the development of written composition skills as progressing through three stages (i.e., knowledge telling, knowledge transforming, and knowledge crafting). Writing skills were framed as improving as a result of practice with planning, language generation, and reviewing information held in working memory. These three models underline the cognitive interactive aspects of writing. Writing is a process that should be "self-planned, self-initiated, and self-sustained" by student writers (Zimmerman & Risemberg, 1997, p. 76). The above models reflect the interconnection between metacognition, self-regulation, and writing. Put simply, learners rely on their knowledge, skills, and experiences to plan, monitor, and regulate their writing process.

One empirical study on self-regulation in writing (Festas et al., 2015) involved 380 Portuguese young learners. Instruction was based on self-regulated strategy development (SRSD), which was an instructional approach designed to help students learn, use, and adopt the strategies used by skilled writers. Students who received SRSD intervention made statistically greater gains in composition elements than the comparison students immediately following instruction and 2 months thereafter.

Another empirical study on the topic (Teng, 2016) included 120 first-year Chinese university students across three conditions: metacognition instruction in cooperative settings, metacognition instruction, and a control group. Findings showed that students exposed to metacognition instruction in cooperative settings demonstrated the best writing performance, presumably due to enhanced metacognitive awareness. Although the study was carried out in a higher education setting, implications could also apply to young learners. For example, (Teng, 2020a) later divided 144 6th-grade students from Hong Kong into four conditions: SRSD+collaborative modeling of text structure; SRSD; collaborative modeling of text structure; and a control group. The combination of SRSD and collaborative modeling of text structure enhanced participants' performance in content comprehension and writing quality. Harris, Ray, Graham, and Houston (2019) explored eight 4th- and 5th-grade students' performance when writing a persuasive essay following close reading of a source text. Instruction on SRSD was included in the writing process. Results showed that students demonstrated meaningful improvements on genre elements, holistic quality, and complexity of plans for writing after SRSD instruction. The above

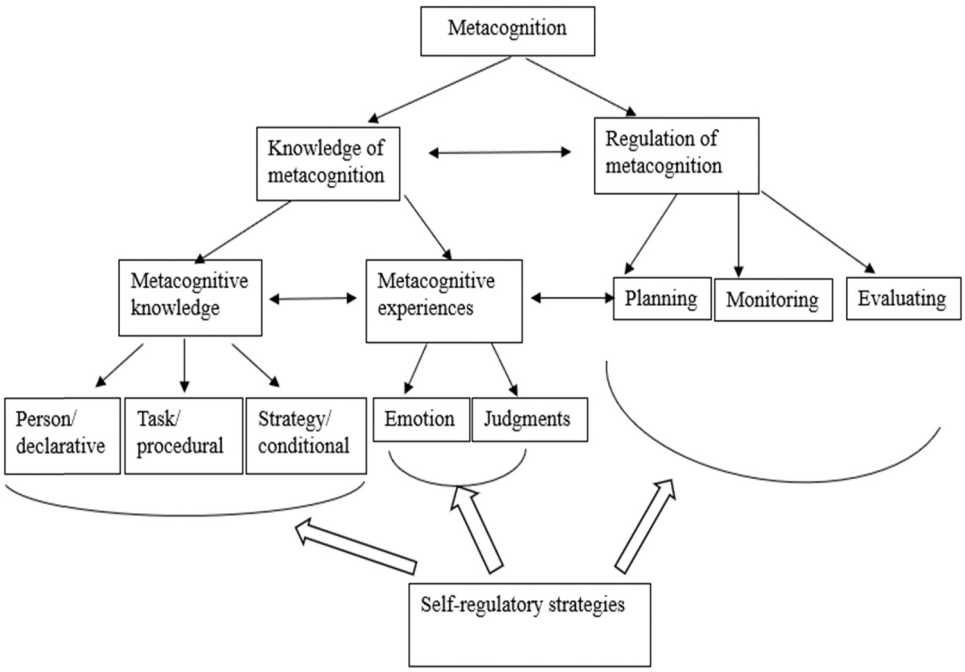


Fig. 1. A conceptual framework of metacognition and self-regulatory strategies.

studies support the roles of self-regulated strategies in writing development. Metacognitive processes can facilitate learners' writing performance, and metacognitive awareness may help learners manage their conigitve efforts and surmount low self-efficacy in writing.

2.2. Differences in developing self-regulatory writing strategies

Writing is "a sociocognitive activity which involves skills in planning and drafting as well as knowledge of language, contexts, and audiences" (Hyland, 2002, p. 23). This sociocognitive perspective on writing has drawn increasing attention to the roles of individual differences in writing and self-regulatory strategy use. While it is necessary to foster learners' awareness of self-regulatory strategies for written output, these strategies are generally considered multidimensional such that learners may demonstrate differences when developing them for writing. Such distinctions can involve planning, translating, reviewing, and monitoring. For example, Teng and Huang (2019) explored differences in secondary school students' development of self-regulatory writing strategies and found that several factors influenced learners' strategy use: age, language learning experience, gender, time commitment, familiarity with writing topics, school prestige, and interest in learning English. Older learners reported greater use of self-regulated writing strategies with the exception of peer learning. Female students reported using more self-regulatory writing strategies than male students. In addition, learners with more extensive English learning experience and those who committed more time to learning English reported greater use of self-regulatory writing strategies. In a study conducted in a multimedia writing context (Qin & Zhang, 2019), university learners' differences in English proficiency led to disparities in metacognitive awareness for multimedia writing. For example, compared to learners who had higher proficiency and employed cognitive methods to garner and sustain affective experiences and motivation, junior learners with lower proficiency were less able to set writing goals, monitor output based on these goals, and evaluate their writing product.

Research has also uncovered differences in writing strategies adopted by skilled and less skilled writers (Forbes, 2019). In particular, skilled L2 writers appear to spend more time planning, revising, and editing at the discourse level; by contrast, less skilled L2 writers tend to view the writing process as a task of putting words and sentences together rather than assembling a global text. De Silva and Graham (2015) performed stimulated recall interviews with 12 university students to explore the use of self-regulated writing strategies according to students' proficiency. Findings demonstrated differences between high- and low-proficiency learners' strategy use, while metacognition instruction could enhance strategy use in both groups. Ma and Teng (2021) tracked two university students' writing processes using focus group interviews with students, student writing (e.g., outlines and drafts), and teacher and peer written feedback. The findings suggest both similarities and variations in the two students' development of knowledge in metacognition. In terms of similarities, the two student writers both highlighted the usefulness of student samples in enabling them to understand the features of academic writing. In terms of differences, the two participants demonstrated different levels of engagement with the learning-to-write process due to differences in strategy use. Despite interest in the roles of individual differences in learners' L2 writing and self-regulatory strategy use, studies on how individual differences (e.g., grade and gender) influence strategy use in the secondary school context are scarce.

2.3. Predictive effects of self-regulatory writing strategies on EFL writing

Self-regulatory strategies enable learners to achieve active, self-directed learning involvement (Wenden & Rubin, 1987), particularly for writing (Teng, 2021). Learners' abilities to select and organize information, rehearse materials, allocate resources to memory, and evaluate the learning process afford them control over information processing and thus can enhance learning (O'Malley & Chamot, 1990). Learners' differences in developing metacognitive awareness may elucidate their differences in writing development. It thus seems essential to explore how learners' unique self-regulatory strategy use predicts writing performance.

In recent years, researchers have begun to unmask the predictive effects of self-regulatory writing strategies on writing performance (Teng & Zhang, 2016; Teng, Qin, & Wang, 2021). For example, Teng and Zhang (2016), adopting multiple regression analysis, suggested that seven strategies, including text processing, planning, monitoring, evaluating, feedback handling, emotional control, and motivation, predicted EFL students' writing proficiency. EFL writing has also been found to be influenced by learners' "self-regulation of cognition, motivation, and behavior, which mediates the relations among the person, the environment, and the achievement" (p. 695). Teng, Qin, and Wang (2021) explored metacognitive academic writing strategies. Results supported the predictive effects of declarative knowledge, procedural knowledge, conditional knowledge, planning, monitoring, evaluating, information management, and debugging strategies on EFL academic writing. Graham and Harris (2000) pointed out that self-regulatory strategies, particularly the transcription skills, may act as "change-inducing agents, leading to strategic adjustments in writing behavior" (p. 4). In addition, data collected from a total of 682 secondary school students showed that self-regulatory strategies were found to contribute significantly to the prediction of the students' writing proficiency (Teng & Huang, 2019). Zhang and Qin (2018) also lent support to the proposition that self-regulatory strategies (e.g., planning, monitoring, and evaluation) can forecast learners' performance in multimedia writing; learners' reported use of this strategy cluster could cause them to be more willing to self-reflect on their writing in the university EFL context. When learners realize how to reflect on their work, students can then use these processes to efficiently improve the quality of their writing and ultimately become more independent writers. In a study that focused on a primary school context (Bai, Hu, & Gu, 2014), findings suggested that students used a wide range of writing strategies. In particular, planning, text-generating, revising, monitoring and evaluating, and resourcing strategies were found to be significantly correlated with the participants' English language proficiency.

2.4. Previous writing strategy questionnaires

While the above section supports the assumption that individual differences in self-regulatory writing strategies can lead to individuals' writing performance, resultant insight should illuminate the need to assess self-regulatory writing strategies. For instance, Teng and Zhang (2016) validated a self-regulated writing strategies questionnaire in the Chinese EFL context with a sample of 790 university students. The questionnaire included four factors related to self-regulation, namely cognition, metacognition, social behavior, and motivational regulation. These factors covered nine strategies, and correlation results revealed that the strategies were intercorrelated. The strategies included goal-oriented monitoring and evaluating, idea planning, peer learning, feedback handling, course memory, interest enhancement, emotional control, text processing, & motivational self-talk. Zhang and Qin (2018) also validated a Questionnaire on Language Learners' Metacognitive Writing Strategies in Multimedia Environments (LLMWSIME). The strategy items mainly focused on metacognitive regulation. In a similar study (Qin & Zhang, 2019), a questionnaire on Chinese EFL learners' metacognitive awareness of writing strategies in multimedia environments was conceptualized and validated. The focus was the planning, monitoring, and evaluating strategies. Hwang and Lee (2017) attempted to develop and validate an English writing strategy inventory (EWSI) for the assessment of English writing strategies at the tertiary level. The feature of this questionnaire was on addressing the entire writing process, i.e., learners' strategy use before writing, while writing, and after writing. While Hwang and Lee (2017) adopted PCA for factor analysis to extract an adequate number of factors, the model was not subject to CFA, which means that they did not check the fitness of their model.

The review of the above literature on L2 writing strategies indicated a lack of a scale for measuring L2 writing strategy use among learners in a secondary school context. In addition, the lack of reporting data for the Kaisere Meyere Olkin (KMO) test may not ensure the convergent and divergent validity of the questionnaire psychometrically. Although the above studies attempted to guide the quantitative assessment of writing strategies, those studies included no discussion of how the survey could guarantee which psychometric properties in light of discriminant validity and internal consistency. Overall, researchers adopted questionnaires and adjusted them to their own needs for assessing students in several tertiary education contexts. Those studies provided very little evidence to support the validity of the questionnaire in a secondary school context, typically an examination-oriented context. Therefore, to make the results from studies using questionnaires in the field of L2 writing strategies more reliable for EFL secondary school students, a scale to which multi-level methods validly apply needs to be developed to measure the use of self-regulatory writing strategies. This research gap prompted us to pursue the development of a new, statistically and psychometrically valid self-regulatory writing strategy scale for use with secondary school EFL students.

2.5. Rationale for the present study

In view of the above reviewed studies, we detected two gaps. The first gap was the lack of studies in developing and validating a questionnaire on self-regulatory writing strategies for secondary school learners. A new questionnaire was developed from interviews with students and teachers, and then validated through two samples of participants through EFA and CFA. The second gap was the lack of understanding on young learners' individual differences in the use of self-regulatory writing strategies and the extent to which such strategies can predict their writing performance. This paper, drawing upon two studies, provides insights into writing self-regulation in a secondary school EFL context. The findings also enrich knowledge around the adoption of self-regulation and metacognition theories in secondary school EFL writing contexts.

3. Study 1

3.1. Research design

Study 1 was conducted to validate the inferences and uses of a questionnaire on self-regulatory writing strategies, specifically by exploring complex relationships between discrete dimensions of self-regulation. This study was guided by the following question: *What structural models can represent the hypothesized factors of self-regulatory writing strategy questionnaire?*

3.2. Participants

The study sample consisted of 669 secondary school learners in southwestern China. Initially, 695 students completed the survey; 669 responses were considered valid (response rate: 96.2%). The other responses were not included because of missing responses. Among the 669 learners, responses from 336 were retained for exploratory factor analysis (EFA) while 333 were retained for confirmatory factor analysis (CFA). Of the sample of 336 learners, 112 learners were from secondary school grade 1 and 2 (57 boys and 55 girls), 132 were from grade 3 and 4 (55 boys and 77 girls), and 92 were from grade 5 and 6 (48 boys and 44 girls). Among the sample of 333 learners, 111 were from grade 1 and 2 (57 boys and 54 girls), 122 were from grade 3 and 4 (55 boys and 67 girls), and 100 were from grade 5 and 6 (52 boys and 48 girls). The mean age of the participants was 15.81 (SD = 2.67). All spoke Mandarin Chinese as their first language and were learning English as a foreign language. They began learning English in Grade 3 of primary school. All participants were informed they would need to complete a survey and do some writing, and they enrolled in the study voluntarily. Participants and their parents signed a consent form.

3.3. Questionnaire development

We developed the Self-regulatory Writing Strategy Questionnaire (SRWSQ) based on data from interviews and a thorough literature review. Individual face-to-face interviews were conducted with 20 learners and 10 teachers, who were not involved in subsequent actual studies. In student interviews, participants were asked to reflect on their self-regulatory writing strategies. Questions pertained to how they perceived their use of strategies related to knowledge (e.g., their strengths and weaknesses) and regulation (e.g., planning, monitoring, and evaluating) in writing. The 20 students were diverse in gender and grade level. The 10 teachers, who all had extensive experience teaching in secondary schools, were invited to describe their students' self-regulatory learning behavior and the types of strategies the teachers considered necessary for learning to write. We coded the main strategies suggested by learners and teachers and compared the data with existing work on language learning strategy taxonomies (e.g., Oxford, 2017) and self-regulatory writing strategies (e.g., Teng, 2019a; Teng & Zhang, 2016; Zhang & Qin, 2018). These procedures ensured construct validity for the questionnaire because the items were chosen based on learners' and teachers' perspectives and relevant theories.

We initially selected 45 items for the survey. We invited two experts in second language writing to check the instrument. Based on their feedback, we deleted 5 ambiguous items. We then developed a correlation matrix to determine relationships between variables (Henson & Roberts, 2006). Next, we deleted 2 items with correlation coefficients lower than 0.30 (Tabachnick & Fidell, 2001). The final 38 items were subject to EFA (see the Results section).

A 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) was adopted in this study to understand trait features of learners' strategy use. The questionnaire was developed and administered in a bilingual (English and Chinese) version.

3.4. Questionnaire distribution

The questionnaire was distributed to students for completion in a paper-and-pencil format. Students were allowed to bring it home. They were also encouraged to complete the questionnaire with their parents, and no time limit was imposed.

3.5. Data analysis

Data were analyzed through a series of EFA and CFA, conducted in SPSS AMOS ver. 24. EFA was used to reveal the underlying structure of a relatively large set of variables, while CFA was used to create a model by exploring factors, correlations, covariance patterns, and residual or error values (Byrne, 2016). Models in this study were evaluated based on statistical means to determine their goodness of fit (GFI) to the sample data. Omnibus fit statistics included the chi-square statistic (χ^2,) degrees of freedom (*df*), *p*-value, the ratio of χ^2 divided by *df*, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the comparative fit index (CFI), and the Tucker–Lewis index (NFI). According to Byrne (2016), values of over .90 for GFI, less than 0.1 for RMSEA, less than .05 for SRMR, and equal to or larger than.90 for CFI and NFI indicate an acceptable model fit. A significant *p*-value suggests that the reference model may be appropriate.

4. Results

4.1. Exploratory factor analysis

EFA was conducted on a sample of 336 learners. We first examined the adequacy of the sample and the suitability of data for EFA. The Kaiser-Meyer-Olkin value was .967. Based on Tabachnick and Fidell (2001), a value larger than 0.05 is appropriate for EFA. Bartlett's test of sphericity provides chi-square output. The results were significant, $\chi^2(903) = 9318.59$, $p < .001$; thus, the matrix was not an identity matrix and was adequate for factor analysis. Varimax rotation was adopted to ensure the factors were interrelated. Principal component analysis was applied as a factor analysis extraction method. To extract the most appropriate number of factors, we referred to the Kaiser criterion of using eigenvalues greater than 1 as well as the scree plot. Six factors were ultimately extracted and they explained 56.511% of the variance (Table 1). A scree plot was used to test the number of suitable factors. The scree plot showed a considerable drop after the 6th factor. Thus, other possible factors, which represent approximately 40% of the variance, were not included. Based on key theories in self-regulated learning (Pintrich, 2000; Schunk & Zimmerman, 2012; Zimmerman, 2002), we named the six factors as following: writing planning (WP), goal-oriented monitoring (GOM), goal-oriented evaluation (GOE), emotional control (EC), memorization strategies (MS), and metacognitive judgment (MJ).

Table 1
Extraction results for the six factors.

Factors	Eigen value (Rotated)	% of Variance (Rotated)	Cumulative % of Variance (Rotated)
1	5.032	11.702	11.702
2	5.003	11.635	23.337
3	4.526	10.525	33.862
4	3.707	8.621	42.483
5	3.103	7.216	49.699
6	2.929	6.811	56.511

The six factors' eigenvalues exceeded 1. We then checked the factor loadings and deleted 8 items with factor loadings lower than 0.4 (Field, 2009). The final version of the SRWSQ included 30 items divided across six factors. Table 2 presents the factor loadings and communality. Items' factor loadings ranged from 0.507 to 0.756, while communality ranged from 0.534 to 0.778. The items hence fit their respective factors well. Cronbach's alpha reliability analyses were conducted to examine the psychometric properties of each factor. The values for WP, GOM, GOE, EC, MS, and MJ were 0.854, 0.866, 0.921, 0.915, 0.817, and 0.863, respectively. Overall, these findings demonstrate the factorial structure of the SRWSQ and suggest sound reliability and validity.

4.2. Confirmatory factor analysis (CFA)

CFA results supported two structural models that can represent the hypothesized factors of self-regulatory writing strategy questionnaire. Fig. 2 depicts the six-factor correlated model with standardized regression weights. Based on Raykov and Marcoulides (2008), standardized estimated loadings in the one-way direction from observed to unobserved variables should be larger than.50. Results indicated an acceptable effect size. Our results therefore confirmed that the assumed factors characterizing self-regulated writing strategies were distinct but intercorrelated. The p-value for the 30-item parameter estimate was $p < .001$, indicating statistical significance.

The results also showed an acceptable model fit overall ($\chi^2 = 664.357$; $df = 390$; $p < .001$; $\chi^2/df = 1.703$; GFI = .901; RMSEA = .042, SRMR = .033; CFI = .951; TLI = .906; NFI = 0.890). The different items loaded well on each of the hypothesized correlated factors. Results of the one-factor second-order model appear in Fig. 3.

Structural coefficients of the factors ranged from.84 to.89, indicating convergent validity. Standardized estimated loadings from observed to unobserved variables were all higher than.50, suggesting an adequate effect size (Raykov & Marcoulides, 2008). Self-regulation functioned as a single common factor for the six factors. Findings pointed to an overall acceptable model fit ($\chi^2 = 685.809$; $df = 399$; $p < .001$; $\chi^2/df = 1.719$; GFI = .904; RMSEA = .042, SRMR = .034; CFI = .949; NFI = .901).

5. Study 2

5.1. Research design

Study 2 was an empirical study based on the SRWSQ developed in Study 1. The first purpose was to explore secondary school students' characteristics when we developed the self-regulatory writing strategy questionnaire. We hypothesized that significant grade

Table 2
Results on factor loadings and the communality.

Items	WP	GOM	GOE	EC	MS	MJ	Communality
18	0.628						0.575
14	0.63						0.693
15	0.685						0.63
19	0.564						0.652
1	0.52						0.534
5	0.554						0.597
6		0.549					0.673
11		0.568					0.696
9		0.541					0.546
24		0.645					0.685
22		0.543					0.556
27		0.604					0.647
38			0.574				0.56
36			0.684				0.558
28			0.693				0.603
29			0.756				0.794
21			0.782				0.708
8			0.704				0.748
35				0.628			0.615
37				0.682			0.668
33				0.59			0.585
31				0.529			0.593
32					0.614		0.647
7					0.631		0.625
3					0.507		0.66
34					0.537		0.616
2						0.612	0.663
26						0.754	0.745
13						0.608	0.626
25						0.731	0.778

Note. Writing planning (WP, 6 items), goal-oriented monitoring (GOM, 6 items), goal-oriented evaluating (GOE, 6 items), emotional control (EC, 4 items), memorization strategies (MS, 4 items), metacognitive judgment (MJ, 4 items).

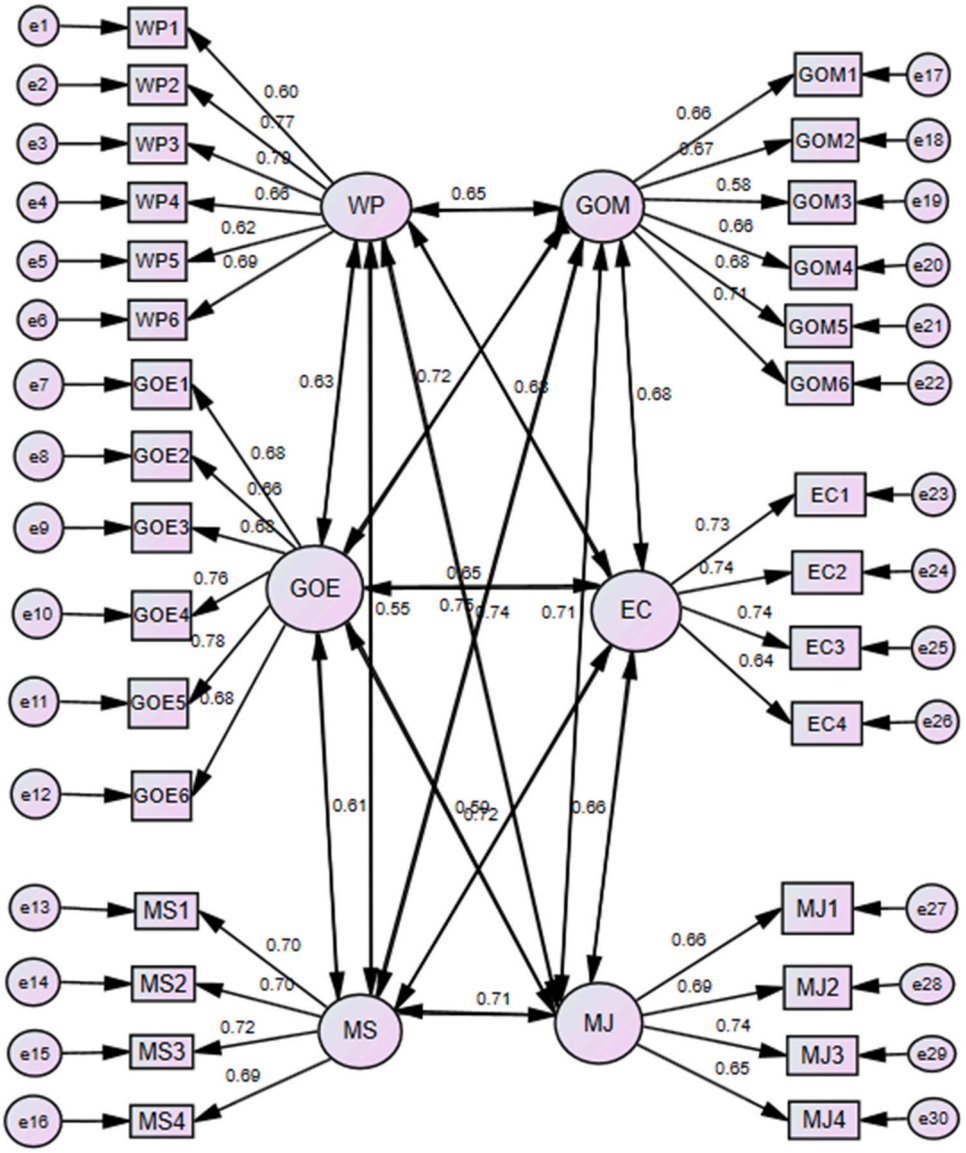


Fig. 2. The six-factor correlated model based on CFA.

and gender differences would manifest in terms of developing self-regulatory writing strategies. The second purpose was to understand the predictive effects of learners' self-regulatory writing strategies on writing performance. As a result, the following research questions guided this study:

1) Do grade and gender differences exist when developing self-regulatory writing strategies? If yes, to what extent?
2) To what extent do learners' self-regulatory writing strategies predict their writing performance?

5.2. Participants

Participants in Study 2 included 239 secondary school students, none of whom took part in Study 1. The sample in Study 2 consisted of a convenience sample of 80 students in grade 1 (40 boys and 40 girls), 79 in grade 3 (40 boys and 39 girls), and 80 in grade 6 (51 boys and 29 girls). The participants' instructor helped collect data. Again, participants had learned English since Grade 3 in primary school. English writing had been a major component of their English acquisition.

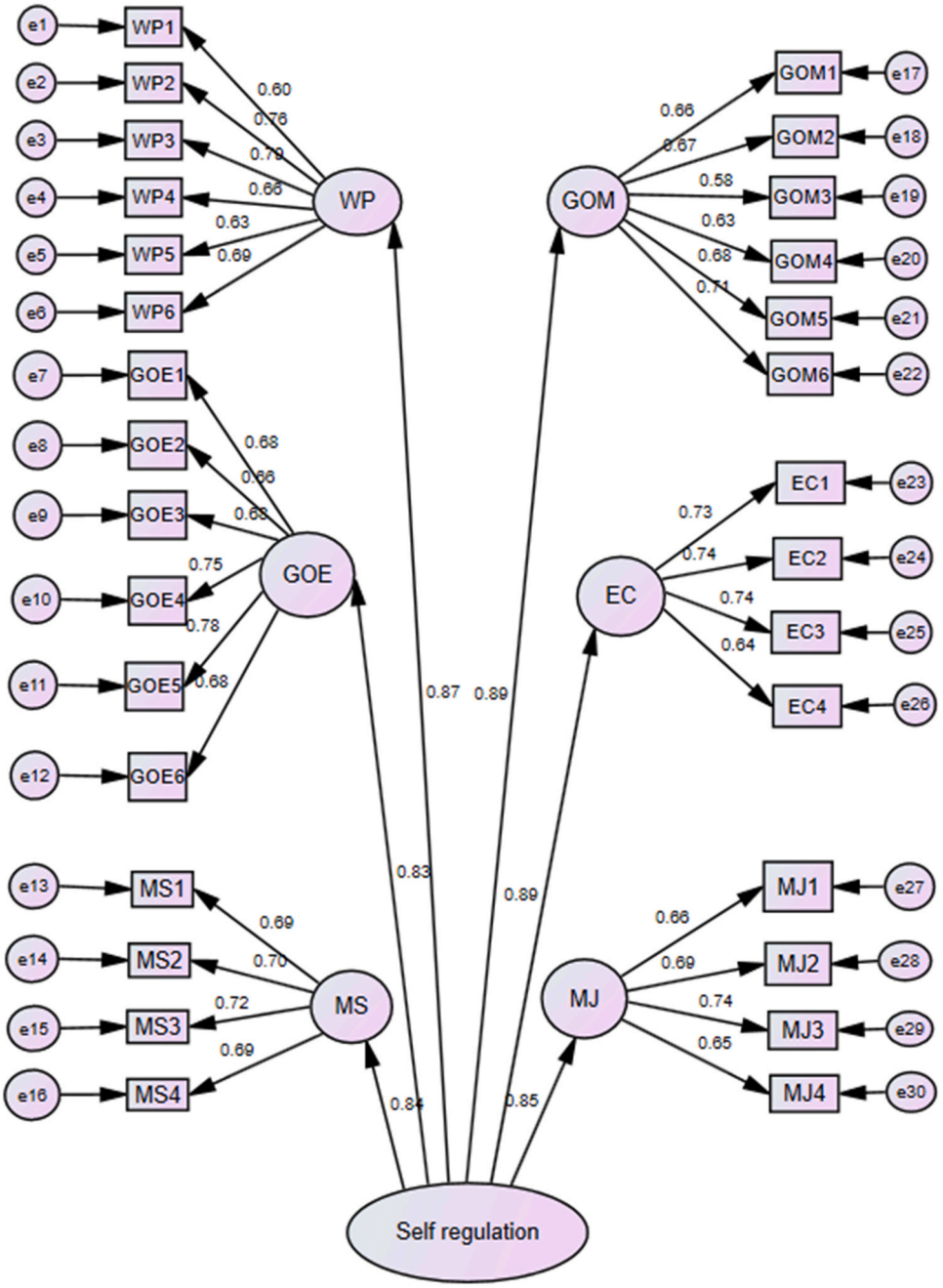


Fig. 3. The one-factor second-order model based on CFA.

5.3. Administration of the instruments

Participants agreed to take part in this study voluntarily and signed the consent form along with their parents. The questionnaire was administered and completed in paper-and-pencil format. Students were encouraged to complete the questionnaire with their parents and were given no time constraints.

Participants also completed a writing test at the end of the semester; this test was standardized for each grade level. This test was co-developed by the team of English teachers in the experimented school. Students were required to write a short essay based on a given topic. The teacher checked the validity of test content. The maximum scores for this test were 30 points, with each five scores awarded to content, grammar, task achievement, coherence and cohesion, lexical resource, and punctuation. Learners were given 40 min to complete the test.

5.4. Data analysis

Data were analyzed through SPSS. We adopted a 2 (gender) × 3 (grade) multivariate analysis of variance (MANOVA). Independent variables were grade level and gender; scores from the six factors in the survey served as dependent variables. Ridge regression analysis was then adopted to evaluate the predictive effects of various factors of self-regulatory writing strategies on students' writing performance. This approach was adopted because multicollinearity was observed in the various dimensions of self-regulatory writing strategies. Multicollinearity can create inappropriate estimates of linear regression coefficients (Le Cessie & Van Houwelingen, 1992).

5.5. Results

In terms of descriptive statistics, Table 3 presents grade differences related to multiple survey factors; Table 4 lists gender differences based on these factors.

As shown in Table 3, students in Grade 6 reported better levels of WP, GOM, GOE, EC, MS, and MJ than students in Grade 3. Similarly, students in Grade 3 reported better levels of WP, GOM, GOE, EC, MS, and MJ than students in Grade 1. Table 4 explains that female students reported better levels of WP, GOM, GOE, EC, MS, and MJ than male students.

Table 5 shows the 2 × 3 MANOVA results. Table 5 shows a significant main effect of grade level on WP, GOM, GOE, EC, MS, and MJ ($p < .001$), as well as a significant main effect of gender on WP, GOM, GOE, EC, MS, and MJ ($p < .001$). Significant interaction effect emerged between grade and gender on the six factors ($p < .05$). The developmental trajectory for male and female students in each grade level was therefore not similar.

Further post-hoc analyses revealed significant differences between students in Grades 6 and 3 ($p < .001$). Again, significant differences manifested between students in Grades 3 and 1 ($p < .001$). Significant differences were observed between male and female students as well ($p < .001$). These results were consistent across the six factors.

We considered Ridge regression results for first-, third-, and sixth-year students. Table 6 contextualizes the predictive effects of different factors in self-regulatory writing strategies on first-year students' writing performance.

Table 6 displays the regression coefficient of WP(β=.199, $t = 11.444$, $p < .001$). Similar results applied for GOM, GOE, EC, MS, and MJ. The R^2 value was .768, indicating that self-regulatory writing strategies explained 76.8% of the variance in students' writing performance. Results of an *F*-test were satisfactory ($F = 661.706$, $p < .001$), confirming the predictive effects of the six strategies on writing performance.

Table 7 presents the predictive effects of different factors of self-regulatory writing strategies on writing performance among third-year students.

Based on standardized coefficients and *p*-values in Table 7, WP, GOM, GOE, EC, MS, and MJ each had significant predictive effects on writing performance. The R^2 value was .751, indicating that self-regulatory writing strategies explained 75.1% of the variance in writing performance. The *F*-test was satisfactory ($F = 417.905$, $p < .001$), confirming the predictive effects of the six strategies on learners' writing performance.

Table 8 lists the predictive effects of different factors in self-regulatory writing strategies on sixth-year students' writing performance.

Standardized coefficients and *p*-values in Table 8 revealed that WP, GOM, GOE, EC, MS, and MJ each had significant predictive effects on writing performance. The R^2 value was .695, demonstrating that self-regulatory writing strategies explained 69.5% of the variance in writing performance. The *F*-test was again satisfactory ($F = 189.728$, $p < .001$) and verified the predictive effects of these six strategies on writing performance.

6. Overall discussion

6.1. Study 1: validation of self-regulatory writing strategies questionnaire

Study 1 was to develop and validate the inferences and uses of a self-regulatory writing strategies questionnaire in a Chinese secondary school EFL context. CFA confirmed six factors for the 30-item questionnaire. The six factors were writing planning, goal-oriented monitoring, goal-oriented evaluation, emotional control, memorization strategies, and metacognitive judgment. As noted, learners' metacognitive awareness was orchestrated through a repertoire of general and specific writing strategies for coping with EFL

Table 3
Descriptive statistics on grade differences for the survey.

Factors	1st year	3rd year	6th year
	M (SD)	*M* (SD)	*M* (SD)
WP	16.19 (2.56)	18.03 (2.58)	18.63 (2.79)
GOM	15.98 (3.07)	17.25 (3.22)	18.71 (2.96)
GOE	17.35 (2.46)	18.58 (2.68)	20.09 (2.46)
EC	11.36 (2.46)	12.66 (2.42)	13.90 (2.29)
MS	10.90 (2.04)	11.96 (2.13)	13.24 (2.07)
MJ	10.15 (2.75)	11.29 (2.95)	12.66 (2.98)

Table 4
Descriptive statistics on gender differences for the survey.

Factors	Female	Male
	M (SD)	*M* (SD)
WP	18.99 (2.22)	16.50 (2.20)
GOM	18.63 (2.28)	16.24 (2.25)
GOE	19.82 (2.22)	17.75 (2.20)
EC	13.46 (2.22)	12.00 (2.20)
MS	12.58 (2.19)	11.58 (2.17)
MJ	12.42 (2.26)	10.54 (2.24)

Table 5
Results on MANOVA.

		Sum of square	DF	Mean square	*F*	*p*	Partial η^2
Grade	WP	319.194	2	159.597	28.784	0.000	0.198
	GOM	370.567	2	185.283	22.409	0.000	0.161
	GOE	364.505	2	182.252	33.378	0.000	0.223
	EC	303.969	2	151.985	28.926	0.000	0.199
	MS	238.539	2	119.269	28.726	0.000	0.198
	MJ	313.597	2	156.798	20.618	0.000	0.150
Gender	WP	359.831	1	359.831	64.898	0.000	0.218
	GOM	330.382	1	330.382	39.958	0.000	0.146
	GOE	247.907	1	247.907	45.402	0.000	0.163
	EC	125.254	1	125.254	23.839	0.000	0.093
	MS	59.092	1	59.092	14.232	0.000	0.058
	MJ	204.498	1	204.498	26.890	0.000	0.103
Grade * Gender	WP	12.999	2	6.266	2.270	0.013	0.012
	GOM	11.532	2	5.766	3.093	0.012	0.021
	GOE	13.293	2	6.646	2.302	0.040	0.023
	EC	17.946	2	8.973	2.756	0.021	0.026
	MS	10.222	2	5.111	3.027	0.014	0.021
	MJ	18.512	2	9.256	4.560	0.012	0.025

Table 6
Ridge regression results on first year students.

	Unstandardized			t	*p*	R^2	Adjusted R^2	*F*
	Coefficient	Standardized coefficients						
	B	SD	Beta					
WP	0.09	0.008	0.199	11.444	0.000**	0.768	0.767	$F(7152) = 661.706$, $p = 0.000$
GOM	0.081	0.009	0.187	9.438	0.000**			
GOE	0.085	0.01	0.177	8.707	0.000**			
EC	0.092	0.01	0.174	9.038	0.000**			
MS	0.078	0.01	0.128	7.736	0.000**			
MJ	0.076	0.008	0.155	9.008	0.000**			

**$p < 0.01$.

Table 7
Ridge regression results on third year students.

	Unstandardized			t	*p*	R^2	Adjusted R^2	*F*
	Coefficient	Standardized coefficients						
	B	SD	Beta					
WP	0.096	0.01	0.215	9.95	0.000**	0.751	0.748	$F(7152) = 417.905$, $p = 0.000$
GOM	0.087	0.011	0.198	7.723	0.000**			
GOE	0.042	0.013	0.089	3.376	0.001**			
EC	0.124	0.013	0.224	9.475	0.000**			
MS	0.117	0.013	0.19	9.079	0.000**			
MJ	0.048	0.011	0.097	4.43	0.000**			

**$p < 0.01$

Table 8
Ridge regression results on sixth year students.

	Unstandardized Coefficient	Standardized coefficients		t	*p*	R^2	Adjusted R^2	F
	B	SD	Beta					
WP	0.088	0.013	0.203	6.588	0.000**	0.695	0.592	$F(7, 156) = 189.728$, $p = 0.000$
GOM	0.099	0.015	0.231	6.596	0.000**			
GOE	0.092	0.018	0.194	5.248	0.000**			
EC	0.048	0.018	0.091	2.695	0.008**			
MS	0.102	0.018	0.174	5.661	0.000**			
MJ	0.035	0.014	0.077	2.532	0.012*			

*$p < 0.05$ **$p < 0.01$.

writing. The six factors clustered under a single common latent factor, which accounted for the six subcategories.

The first factor (writing planning) was composed of six writing strategies: global discourse planning (item 3), local lexical planning (item 2), time management (item 1), materials preparation (item 4), and planning based on feedback (items 5 and 6). Results showed that Chinese secondary school EFL students tended to plan ahead and organize their thoughts and materials for effective pieces of writing. The learners seemed to realize the importance of a high level of autonomy in organizing their ideas before beginning to write. These results echoed findings from previous studies supporting the role of guided planning on writing (e.g., Ruan, 2014; Zhang & Qin, 2018).

The second factor (goal-oriented monitoring) included six writing strategies, such as course learning monitoring (item 11), lexical-level processing (item 12), monitoring learning progress (items 9 and 10), and adjusting strategies (item 8). These strategies convey students' need to monitor their writing processes. This result substantiates earlier work on the role of monitoring in sustaining or enhancing L2 writing performance (Teng, 2019a, 2019b).

The third factor (goal-oriented evaluation) contained six writing strategies: (1) assessment of language use and content (items 12 and 16), knowledge and skills (item 15), evaluation of previous learning (items 13 and 14), and organization (item 17). Scholars have addressed the role of reflection or evaluation as a core motivation to improve learning outcomes (Bruning & Horn, 2000). These findings highlight the importance of secondary school students' self-reflection on their learning-to-write process, which is also an important component of learner metacognition.

Items related to emotional control measured learners' efforts to control emotions and negative feelings when learning to write (items 19, 20, 21, and 22). In line with Teng and Zhang (2016), emotional control is necessary in EFL writing; it reflects learners' motivational regulation and tendencies to avoid distractions in writing.

Items on memorization strategies referred to learners' working memory capacity in retaining sentences (item 23), course materials (item 24), and vocabulary knowledge (items 25 and 26). Items for memorization strategies reflected Teng and Huang's (2019) findings that secondary school students' learning-to-write process should include students' perceived ability to memorize and organize information and ideas.

The sixth factor was metacognitive judgment, which investigated learners' perceived capability to execute metacognitive control in the learning-to-write process. It measured learners' belief in linguistic knowledge (item 29), initiatives in learning to write (items 27 and 28), and writing strategies (item 30). From an SRL perspective, writing activities should be "self-planned, self-initiated, and self-sustained" (Zimmerman & Risemberg, 1997, pp. 73–74). As argued by Zimmerman (2002), learners' writing performance is influenced by metacognitive judgment. Thus, metacognitive judgment provides useful information on learners' belief or confidence in exercising agency for cognitive processing, behavior, and achievement.

6.2. *Study 2: differences in developing self-regulatory writing strategies*

Our findings based on study 2 suggested individual differences in the development of self-regulatory writing strategies. In particular, statistically significant main effects of gender and grade level were observed on the development of self-regulatory writing strategies: students in higher grade levels reported more use of self-regulatory writing strategies than those in lower grade levels, and female students reported more use of self-regulatory writing strategies than males. Consistent with Teng and Huang (2019), there were individual differences in secondary school students' development of self-regulatory writing strategies. In their study, older learners reported greater use of self-regulatory writing strategies, except for peer learning. Female students reported more use of self-regulatory writing strategies compared to male students. Older learners reported greater use of writing strategies, potentially due to having a better proficiency level. As argued by Forbes (2019), a certain level of English proficiency may explain why some learners can develop and transfer writing strategies while some cannot. Given an increase in self-regulatory strategy use between low- to high-proficiency English language learners, it is reasonable for students in higher grade levels to report using writing strategies more than their counterparts in lower grade levels.

However, our results diverged from those of Yukselturk and Bulut (2009), who found no statistically significant differences with respect to gender in terms of learners' development of motivational beliefs, self-regulated learning variables, and achievement in online learning. These patterns may not apply to secondary school learners, as revealed in the present study. Our findings showed that compared to female students, male students, especially those in lower grades, did not have sufficient confidence in writing and might

be at risk when learning to write in English. In light of individual differences related to developing self-regulatory writing strategies, we argue that the development of these strategies is multidimensional and dynamic. As Zimmerman and Risemberg (1997) noted, writing is a cyclical process of "environmental processes, behavioral processes, and personal processes" (p. 76). The development of writing self-regulation is further regarded as conscious regulation and control of cognitive activity (Harris et al., 2016; Teng, 2016); therefore, it is essential to include learners' individual differences when seeking to understand how to automatize the use of self-regulatory writing strategies.

6.3. Study 2: predictive effects of self-regulatory writing strategies on writing

Our findings based on Study 2 also showed that the six self-regulatory writing strategies had predictive effects on EFL secondary school students' writing performance. This evidence suggests that enabling learners to engage with their writing is crucial to their writing performance. In particular, these results substantiate the claim that writing performance among secondary school learners in an EFL context depends on learners' understanding and use of strategies related to writing planning, goal-oriented monitoring, goal-oriented evaluation, emotional control, memorization, and metacognitive judgment. Self-regulatory writing strategies also play key roles in directing, stimulating, motivating, and sustaining learners' effort, thus predicting writing performance (e.g., Teng, 2019a; Zhang & Qin, 2018).

First, our findings support planning, monitoring, and evaluating as core aspects of writing performance (e.g., Qin & Zhang, 2019; Zhang & Qin, 2018). The results also align with findings underscoring the role of metacognitive control in fostering active writing engagement (Teng, 2016, 2020b). Reflecting Flower and Hayes (1980) cognitive model of writing, cognitive processes or strategies (e.g., planning, translating, and reviewing) represent similarly essential writing skills. As argued by De Silva and Graham (2015), learners' awareness in planning, monitoring, and evaluation enhances writing outcomes. Second, emotional control predicts writing outcomes. As discussed earlier, emotional control strategies were directly related to how students actively regulated their negative feelings such as anxiety or worries about writing. Positive emotions may encourage learners to become more committed to writing. This association corroborates Zimmerman (2002) argument that emotional control is crucial for writing. Third, memorization strategies significantly affected learners' writing performance; in our case, remembering certain materials or course knowledge was pivotal to secondary school students' writing performance. This result contradicts Teng and Zhang's (2016) finding that course memory was not a significant predictor of writing scores. Different from university students in Teng and Zhang's (2016) work, secondary school students in this study tended to rely on memorizing certain materials or course knowledge for writing. These differences could be attributable to the nature of learning to write in a university versus secondary school setting. Finally, metacognitive judgment predicted students' writing performance.

Taken together, these findings confirm the predictive effects of self-regulatory writing strategies on EFL secondary school students' writing performance. Overall, our results support previous studies revealing positive relationships between metacognition and writing outcomes (for a review, see Zimmerman, 2002; Harris et al., 2019). In the present study, we identified diverse predictors of self-regulatory writing strategies on students' writing performance and noted that self-regulation of cognition, motivation, and behavior can each influence relations between learners' strategy use and writing outcomes. We emphasized the effects of self-regulatory writing strategies on promoting active and efficient writing; in particular, learners require instruction on self-regulatory writing strategies from a multidimensional perspective (Teng, 2019b, 2020a). As Zimmerman and Risemberg (1997) contended, enhancing students' strategies, including self-regulatory strategies, facilitates students' management of the cognitive aspects of writing in working toward better writing outcomes.

6.4. Limitations and implications

This study has several limitations. First, according to Ma and Teng (2021), learners' discrepancies in English proficiency can lead to disparities in writing-related metacognitive awareness. For example, compared to learners possessing better proficiency and who employ cognitive methods to garner and sustain affective experiences and motivation, junior learners with lower proficiency were less able to set writing goals, monitor output based on their writing goals, and evaluate their writing product; however, learners' English proficiency was not included as a variable in this study. Second, our SRWSQ measure did not evaluate learners' knowledge of metacognition. Scholars should observe learners' behavior longitudinally to obtain a holistic portrayal of learners' metacognitive awareness. Finally, other variables (e.g., motivation, aptitude, and working memory) may influence students' metacognitive awareness, although these variables were not addressed in this study. There were also limitations involved in the development of SRWSQ. The questionnaire includes different types of strategies, e.g., cognitive, text composing strategies and learning-to-write strategies. However, this study did not differentiate between different types of strategies through different labels or including them in separate sections. In addition, some of the items overlap with those reported in other studies (e.g., Teng & Zhang, 2016), particularly the planning and monitoring strategies. Given that all the participants were from the Chinese EFL context, it is not surprising for some students to express some similar strategies in writing even though Teng and Zhang (2016) focused on university students and our study focused on secondary school students.

Despite these limitations, our findings point to directions for future research to delineate the intercorrelation between self-regulation and writing in a secondary school EFL context. The findings suggest implications for writing assessment. First, the SRWSQ, a valid and reliable measure in assessing writing self-regulation, can be used as a diagnostic tool in EFL writing assessment to help instructors identify activities that are perceived as difficult or risky to carry out by secondary school students. EFL teachers can use such information to assess instructional programs and relevant activities, tasks, and strategies to address the detected problems. EFL

secondary school students could also employ the SRWSQ as a self-assessment tool to appraise their perceived abilities to perform writing tasks. As argued by Slomp (2019), learners need programs of writing assessment that support them in their learning, and the assessment of cognitive and metacognitive skills is essential to that learning. Second, it is important to acknowledge the wide variations in individuals' use of self-regulatory writing strategies and their writing outcomes. This factor is especially important to EFL secondary school writing assessment. Instructional writing assessment, which is for planning instruction, giving feedback, and monitoring student writing progress, requires teachers' awareness of students' individual differences in the use of writing strategies. The focus of writing assessment should be on identifying students' strengths and weaknesses, planning instruction to fit their diagnosed needs, evaluating instructional activities, giving feedback, monitoring performance, and reporting writing progress. Finally, EFL secondary school students' writing is dependent on their awareness of how writing is developed and, most importantly, their writing self-regulation. Self-regulatory writing competence, which we described as learners' ability to adapt skills and strategies to suit their needs and contextual conditions for agentic writing, should be included in EFL writing assessment. From a macro-point of view, policies should be made in guiding students to engage in critical thinking through planning, monitoring, and regulating their writing processes. It would be highly desirable to communicate this message to secondary school learners along with the acknowledgment that they must become aware of self-regulatory strategies for effective writing.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Appendix. Self-regulatory Writing Strategy Questionnaire (SRWSQ)

Dear parents and students,

Thanks for helping us understand young learners' metacognitive development. This is not a test, so there are no "right" or "wrong" answers, only personal opinions which we value. We aim to explore individual differences so do not worry about "right" or "wrong". Please talk with your child and give your answers sincerely as only this will guarantee the success of the investigation. Thank you for your cooperation. Please indicate your own opinion after each statement by circling the number that best describes the extent to which you agree or disagree with the statement.

1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = Neutral, 5 = slightly agree, 6 = agree, 7 = strongly agree.

For example, if you 'strongly agree' that "English writing is important", please circle '7′:

English writing is important	1	2	3	4	5	6	⑦
1. I think about how much time I should spend on each part of the essay. (WP)	1	2	3	4	5	6	7
2. I search for some good words and sentences in mind before writing. (WP)	1	2	3	4	5	6	7
3. I list main ideas or details before writing. (WP)	1	2	3	4	5	6	7
4. I collect relevant materials and do some reading preparation for the writing topic. (WP)	1	2	3	4	5	6	7
5. I plan for my writing based on peer feedback. (WP)	1	2	3	4	5	6	7
6. I plan for my writing based on teacher feedback. (WP)	1	2	3	4	5	6	7
7. I set up goals to check my writing activities or exercises (GOM)	1	2	3	4	5	6	7
8. I adjust the writing strategies if they are not effective for my writing goals. (GOM)	1	2	3	4	5	6	7
9. I monitor my learning process to find out solutions for my writing goals. (GOM)	1	2	3	4	5	6	7
10. I check my writing progress in order to reach my writing goals. (GOM)	1	2	3	4	5	6	7
11. I check what I have learned from the English courses and what are helpful for writing. (GOM)	1	2	3	4	5	6	7
12. I find myself pausing regularly to think for the best expression for my writing. (GOM)	1	2	3	4	5	6	7
13. I evaluate what I have learned from the writing activities or exercises. (GOE)	1	2	3	4	5	6	7
14. I evaluate whether I have achieved my previously-set goals for writing. (GOE)	1	2	3	4	5	6	7
15. I evaluate my mastery of the knowledge and skills learned in English courses. (GOE)	1	2	3	4	5	6	7
16. I check and revise sentences to ensure content and grammar accuracy after writing. (GOE)	1	2	3	4	5	6	7
17. I put all the words that I have written wrong together for further review. (GOE)	1	2	3	4	5	6	7
18. After writing, I ask someone else to read it and give me feedback. (GOE)	1	2	3	4	5	6	7
19. I calm down and finish the writing exercise even though I do not want to. (EC)	1	2	3	4	5	6	7
20. I tell myself not to worry when taking a writing test. (EC)	1	2	3	4	5	6	7
21. I regulate my mood when I do not know how to write. (EC)	1	2	3	4	5	6	7
22. I continue doing my English writing when I encounter difficulties or challenges. (EC)	1	2	3	4	5	6	7
23. I memorize key sentences for my writing. (MS)	1	2	3	4	5	6	7
24. I read the course material over and over again to help me remember them. (MS)	1	2	3	4	5	6	7
25. I read aloud words and expressions taught in English courses to help me remember them. (MS)	1	2	3	4	5	6	7
26. I memorize words through combining them with pictures. (MS)	1	2	3	4	5	6	7
27. I believe that it is important to complete the writing exercises by myself. (MJ)	1	2	3	4	5	6	7
28. I believe that understanding my strength and weakness on English writing can lead to better writing performance. (MJ)	1	2	3	4	5	6	7
29. I believe that understanding the meaning of individual words in texts is important for writing. (MJ)	1	2	3	4	5	6	7
30. I believe that studying writing strategies will lead to better writing performance. (MJ)	1	2	3	4	5	6	7

Note. WP = Writing Planning (6 items); GOM = Goal-Oriented Monitoring (6 items); GOE = Goal-Oriented Evaluating (6 items); EC = Emotional Control (4 items); MS = Memorization strategies (4 items); MJ = Metacognitive Judgment (4 items).

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