Iranian Journal of Applied Language Studies
Print ISSN: 2008-5494 Online ISSN: 2322-3650
Homepage: https://ijals.usb.ac.ir
University of Sistan and Baluchestan
Uppsala University

Investigating Metacognitive Writing Awareness among Japanese Language Learners

Zeinab Shekarabi

Assistant Professor, Faculty of Foreign Languages and Literatures, University of Tehran, Tehran, Iran, Email: lshekarabi@ut.ac.ir

Abstract

Given the key role of metacognition in improving second language learning, metacognitive awareness writing (MWA) has gained increasing importance as one of the factors affecting the quality of learners' writing. However, few studies have systematically examined this concept among learners of Japanese as a foreign language (JFL), particularly with respect to individual differences such as gender, language proficiency, and writing ability. Relying on Flavell's (1979) metacognitive theory and the Schraw and Moshman (1995) model, this study investigated MWA in 80 Iranian JFL learners. Using the Metacognitive Awareness Writing Questionnaire (MAWQ), metacognitive awareness in these learners was examined with regard to writing ability, language proficiency, and gender. Results showed that metacognitive awareness in these learners was significantly related to writing ability. However, despite the widely-held belief that higher linguistic competence is necessarily associated with greater writing ability, their linguistic competence was not significantly related to MWA, with no difference observed between females and males in the metacognitive components of writing. The findings highlight the need to teach metacognitive strategies in second language writing classes and to reconsider widely-held assumptions of a direct relationship between linguistic competence and writing ability.

Keywords: gender, Japanese as a foreign language, language proficiency, metacognitive awareness, second language writing

1. Introduction

Foreign language writing is one of a number of complex but fundamental language skills, and its effective acquisition requires a deep understanding of cognitive and metacognitive processes. Contrary to the

popular belief that learning to write is limited to improving language skills (i.e., grammar, vocabulary, and textual coherence), recent studies have emphasized the importance of metacognitive components such as planning, monitoring, and evaluation in improving writing quality (Qin et al., 2022; Wenden, 1998). Metacognitive theories, especially Flavell's framework (1979) and Schraw and Moshman's two-component model (1994, 1995), highlight the key role of individual awareness of one's thought processes and strategies in performing complex activities such as writing. Today, metacognitive writing awareness is increasingly recognized as an important construct for understanding learners' writing processes and performance in second language writing research (Sun et al., 2023; Xu & Zhu, 2024).

Although previous studies have consistently reported positive associations between general language proficiency and writing performance, language proficiency and writing ability have often been treated as closely related constructs rather than examined as distinct dimensions of writing competence (Sun et al., 2023; Teng, 2020a; Teng & Zhang, 2016; Xu & Zhu, 2024). As a result, the complex relationships between linguistic knowledge, writing performance, and metacognitive writing awareness (MWA) remain insufficiently understood. Furthermore, relatively few studies have simultaneously examined the influence of learner characteristics such as language proficiency, gender, and writing ability on MWA, particularly in Japanese as a foreign language (JFL) contexts.

In response, this study examines metacognitive awareness in writing in relation to individual factors such as language proficiency, gender, and writing skills among Iranian learners of Japanese as a foreign language. In particular, it distinguishes between linguistic competence and writing competence to clarify whether higher second language proficiency alone can lead to a better understanding of the writing process or whether cognitive and metacognitive components need to be strengthened separately in order to improve writing quality. Furthermore, the study examined possible differences in MWA among elementary, intermediate, and advanced language learners and between more-skilled versus less-skilled writers to provide a more fine-grained picture of the dynamics of metacognition in the writing process.

More specifically, the study sought not only to fill conceptual and empirical gaps in the literature but also to contribute to the theoretical and practical enrichment of the field of metacognitive awareness of second language writing, especially in the JFL context, by performing cross-level, interpersonal comparative analyses. Simultaneously examining neglected dimensions such as the interaction of gender, language proficiency, and writing skills with metacognitive

strategies in the JFL context, it provides new insights into the dynamics of writing in Asian languages.

2. Literature Review

2.1 Theoretical Framework of Metacognitive Awareness

The study is framed by metacognitive theory, a concept with roots in the early work of Flavell (1979) and further developed in more recent cognitive models such as Schraw and Moshman's (1995). Metacognition refers to individuals' awareness of their cognitive processes and their ability to monitor, control, and regulate them. In the context of second language writing, metacognition plays a key role in effectively managing the various stages of writing, including planning, editing, revising, and evaluating.

Flavell (1979) divided metacognition into two main components: 1) metacognitive knowledge, and 2) metacognitive regulation. Metacognitive knowledge includes awareness of the task and related strategies, while metacognitive regulation includes planning, monitoring, and evaluating while performing cognitive activities. The theory holds that learners learn effectively when they consciously monitor and regulate their own thoughts and cognitive actions. Schraw and Moshman's (1995) two-component model complements this theoretical foundation with a more precise and measurable classification. In this model, metacognition is divided into two main dimensions: 1) metacognitive knowledge, which itself includes three sub-components: declarative knowledge (knowledge about what I know), procedural knowledge (how to do something), and conditional knowledge (when and why to use a particular strategy); and 2) cognitive regulation, which refers to active processes such as planning, monitoring, and evaluation by the learner while performing a cognitive task. This dual framework is critical to the present study as writing in a second language requires structured planning, attention to communicative purpose, revision, and continuous evaluation of the text being produced. Especially for learners with developing language skills, this can only be successfully implemented through the effective presence of metacognition. Accordingly, the above framework was used in this study to design an instrument for measuring MWA and to explain its relationship with individual factors and writing ability.

The conceptual framework outlined above has formed the basis of much subsequent research in second language teaching, especially academic writing (Li et al., 2026; Teng et al., 2022; Wenden, 1998; Zhang & Zhang, 2019). In second language teaching, researchers have emphasized the role of metacognitive awareness as a facilitator of learning (Anderson, 2002; Li et al., 2026; Teng & Ma, 2024). Writing in a second language, especially in languages with a different writing system such as Japanese, is a complex, multi-layered process requiring self-regulation and continuous monitoring. Hence, the ability of learners to regulate their writing at metacognitive level is a determining factor in their success in producing effective texts (Teng, 2020a; Teng & Yue, 2023).

This theoretical framework is also consistent with the findings of self-regulated learning theory (Zimmerman, 2000), which emphasizes that successful language learners guide their own learning through goal setting, cognitive strategies, monitoring progress, and performance correction. These elements are consistent with the components of metacognitive awareness in writing and can be used in the design of effective, support-oriented instruction in the foreign language classroom.

Although these models have been widely used in cognitive and educational studies, they remain relatively underexplored in second language teaching, particularly in second language (L2) writing. Though studies such as Nelson and Narens (1990) and Veenman et al., (2006) show the importance of metacognition in learners' success in performing complex tasks such as writing, recent research has further confirmed that metacognitive awareness and experiences play a central role in regulating second language writing processes and are closely associated with writing development and performance (Li et al., 2026; Sun et al., 2023, 2024). Nevertheless, much of the earlier literature focused primarily on first-language contexts, with comparatively less attention devoted to second language learning, especially foreign language writing.

Despite the general recognition that written metacognition contributes to writing ability, there remains a lack of theoretical consensus on the precise constructs of this ability and how to measure it. While some studies such as Raoofi et al., (2014) uncovered a relationship between metacognitive knowledge and writing skills, most studies focused on only one component, made no clear distinction between them, or failed to consider second language writing. Furthermore, some studies, such as Wenden (1998) and Victori (1999), present metacognition merely as a set of learning strategies without fully examining the role of dynamic interactions between knowledge and regulation components in writing production. Yet writing in a second language is not simply a linguistic skill but a complex, cyclical, monitored decision-making process that requires continuous engagement with high-level processes such as planning, organizing, and revising. Although more recent research has attempted to operationalize the components of writing metacognition more precisely (e.g., Teng & Zhang, 2016; Zhang & Zhang, 2019), questions remain about the precise specification of constructs and how these interact with learners' language proficiency.

In summary, although ample evidence points to the positive role of metacognitive awareness in improving writing performance, gaps such as the lack of a coherent theoretical framework, limited localized assessment tools for foreign language learners, and a limited focus on analyzing intra-metacognitive components in second language writing highlight the need for more in-depth research in this area. To address these conceptual and practical gaps, the present study focuses on JFL learners within the integrated theoretical framework of Flavell (1979) and Schraw and Moshman (1995).

2.2. Metacognitive Awareness in Second Language Writing

Metacognitive awareness in second language writing is considered a key component of self-regulation and improved written performance in language learners. Over the last two decades, research has increasingly examined the role of metacognitive components such as planning, monitoring, and evaluation in second language writing. Findings often show that learners more proficient in all three skills are not only more capable of producing coherent, purposeful texts but also actively engage in monitoring progress and refining ideas during writing (Teng, 2020a). However, interpreting these findings requires caution as some studies, especially those conducted in Asian contexts, point to weaknesses in the use of effective monitoring and evaluation strategies among language learners. Many L2 learners, especially at elementary and intermediate levels, appear to lack a clear understanding of the purpose of metacognitive strategies and to use them superficially and mechanically without necessarily improving the quality of their writing (Negretti, 2012; Teng & Zhang, 2016; Wang et al., 2024).

Further, though results show that learners are able to engage in deeper levels of review and evaluation of their writing and that the quality of their written texts improves (Xu & Zhu, 2024), these findings cannot be generalized to all contexts. In addition, because some studies, especially those using longitudinal designs, show that the long-term persistence of these effects is not guaranteed and continuous training and feedback are required, metacognitive skills are once again marginalized (Negretti, 2012). Although teaching metacognitive strategies may be effective initially, if learners cannot link these to personal goals, contextual analysis, and understanding of their audience, metacognitive awareness is reduced to an instrumental, ineffective level. In contrast, literature shows that educational interventions based on explicit metacognitive training can be effective in improving learners' writing performance. For example, while teaching metacognitive strategies such as the use of self-monitoring checklists or guided feedback helps learners strengthen their writing skills through self-regulation (Wang et al., 2024), the effectiveness of such training is highly dependent on the educational context as well as learners' age, proficiency level, and attitude towards independent learning. Some studies even suggest that unless learners acquire a deeper understanding of metacognitive constructs, they may fail to analyze the writing context and set independent goals and thus be limited to a superficial application of metacognition.

Another important point noted in recent literature is the relationship between language proficiency and metacognitive awareness. Although some research supports the assumption that due to their greater language proficiency, more advanced learners can access a wider range of metacognitive strategies (Alamri, 2019; Habók et al., 2022; Teng & Zhang, 2021), this relationship is not always linear or straightforward. More detailed studies are needed to determine whether high language proficiency alone leads to stronger metacognitive performance or whether other factors, including attitude toward independent learning, prior experience of writing in an L2, or the learners' cognitive style may play a mediating role. This is especially important for learners

taught in teacher-centered settings since even at advanced proficiency levels, they may have limited metacognitive ability due to poor self-regulation.

Taken together, these studies suggest that while research provides valuable evidence of the role of metacognition in L2 writing, it has not yet fully addressed the complex relationship between metacognitive components, language proficiency, and educational context, leaving a gap for research to examine these factors in a combined and comparative manner. Furthermore, the focus on ESL learners in English-speaking contexts has led to far fewer studies of foreign language learners (including JSL learners in non-Japanese contexts). This highlights the need for localized research that more closely examines the role of context, educational culture, and individual differences in the development of metacognitive awareness in second language writing.

2.3. Metacognitive Awareness in Second Language Writing and Gender

Metacognitive awareness in second language writing, a key dimension of language learners' writing performance, has also been the focus of researchers from the perspective of gender differences. However, despite the expansion of research in metacognition, examining the role of gender in this area remains limited and in many cases fails to provide coherent or convincing results.

Some studies point to significant differences between females and males in the use of metacognitive strategies in writing (Nasim et al., 2024; Irvin, 2017). For example, female language learners use more monitoring and evaluation strategies, while males focus more on planning (Irvin, 2017). These differences may be due to psychological, social, educational, or cultural factors influencing the learning styles and cognitive beliefs of both genders. However, these differences cannot be generalized as other studies report no significant correlation between gender and metacognitive awareness (Bai et al., 2014; Xue et al., 2024; Zeynali, 2012).

The main difficulty in explaining these differences is the lack of in-depth, multi-layered analytical approaches in previous studies. In cases where gender differences have been reported, these are not thoroughly explained from the perspective of cognitive theories or learning psychology. In particular, theories of gender as a social construct rather than a purely biological variable are rarely included in existing analyses. Consequently, it remains unclear whether any differences observed across studies simply reflect real differences in metacognitive abilities or are due to different social and educational expectations of females and males.

Another important gap in the literature is the lack of attention given to the interaction between language proficiency and gender in the formation of metacognitive awareness. Some evidence suggests that gender differences may be more evident at lower proficiency levels but become less pronounced at more advanced levels (Rinaldi et al., 2023). Overall, although studies have examined the role of gender in metacognitive awareness in second language writing, existing research is scattered, sometimes contradictory, and often lacks a coherent theoretical framework.

Hence, there is a need for comprehensive, contextualized research that will provide a deeper understanding of the interaction between gender and other cognitive and social factors in the formation of metacognitive awareness in second language writing. Importantly, conducting research in diverse and less researched cultural contexts such as JFL settings will add to theoretical and applied richness in this field.

3. Purpose of the Study

The above summary of literature shows that although numerous studies have examined the role of metacognitive components in second language writing, the predominant focus has been on English as a second or foreign language (ESL/EFL), with Japanese as a foreign language (JFL) learners largely marginalized. This neglect of less studied educational contexts, especially languages with non-alphabetic writing systems such as Japanese, limits our understanding of the interaction between metacognitive awareness and writing performance in learners. Furthermore, most existing studies either focus on general aspects of metacognition or limit themselves to descriptive and superficial analyses without simultaneously or systematically examining more detailed dimensions, including the role of individual factors, language proficiency, or writing ability.

First, few studies compare levels of metacognitive awareness among learners at different proficiency levels, and such comparisons are often made in the form of general categories without detailed statistical or theoretical analyses. Second, the influence of gender on metacognitive awareness in writing has either not been considered or results have been inconsistent and non-generalizable. Third, the distinction between learners' writing skills and their general language ability has often been ignored. As a result, it is unclear whether metacognitive performance is based on actual writing skills or is simply a reflection of general language proficiency. Furthermore, the relationship between various components of metacognition, including planning, monitoring, and evaluation, and actual writing performance in Japanese has rarely been analyzed in rigorous, multivariate, and mixed-methods research designs.

In response, the present study focuses on JFL learners using a set of specific questions examining levels of metacognitive awareness in writing as well as any differences based on individual and educational characteristics. To this end, it measures the overall level of metacognitive awareness among JFL learners. Second, it considers whether increasing language proficiency is necessarily accompanied by growth in metacognitive skills. It also pays attention to writing skills rather than to overall language proficiency and analyzes differences in metacognitive performance between skilled and less-skilled writers. Finally, by examining the relationship between metacognitive awareness (and its dimensions) and the ability to write in Japanese, it presents a causal-descriptive model to better explicate this interaction. The research questions are as follows.

RQ1. What is the metacognitive writing awareness (MWA) level of JFL learners?

RQ2. Does the MWA level of JFL learners differ by gender?

RQ3. Does the MWA level of JFL learners differ by language proficiency (elementary, intermediate, and advanced)?

RQ4. Does the MWA level of JFL learners differ by Japanese writing ability (more-skilled/proficient vs. less-skilled/novice)?

RQ5. Is there a significant relationship between metacognitive awareness and its sub-categories and the Japanese writing ability of JFL learners?

4. Method

4.1 Participants

Eighty learners studying L2 Japanese at a university in Iran participated voluntarily in this study. Because eight participants did not complete all stages of the intervention, data from 72 subjects were used (51 females, 21 males). Average age was 21.4 years. Participants first took a Japanese language proficiency test (JLPT), based on which their Japanese language proficiency was determined: 22 elementary, 24 intermediate, and 26 advanced. To measure their writing ability, they were asked to write a descriptive essay in Japanese. Of the 72 participants, 46 learners wrote the essay. Based on essay scores, 24 learners were identified as having higher proficiency and 22 as having lower proficiency in Japanese writing.

4.2 Instruments

Since the theoretical framework of this study, namely the combination of Flavell's (1979) metacognitive theory and the Schraw and Moshman (1995) model, not only provides a strong conceptual framework for analyzing and measuring metacognition but also provides practical guidance for developing instructional strategies for second language writing classes, it allows for a detailed empirical examination of the various components of metacognitive awareness and their effects on writing performance. In line with this framework, the Metacognitive Awareness Writing Questionnaire (MAWQ; Farahian & Avarzamani, 2018), which is based on these theoretical components, was used as the measurement tool in the present study. MAWQ consists of 36 statements divided into two dimensions: Knowledge of Cognition, and Regulation of Cognition, each with two dimensions as subcategories measuring six main dimensions of MWA, of which three dimensions: Declarative Knowledge, Procedural Knowledge, and Conditional Knowledge are subcategories of Knowledge of Cognition, and three dimensions: Planning & Drafting, General Strategies, and Monitoring & Revision are subcategories of Regulation of Cognition. These dimensions represent a practical and measurable translation of Flavell's theory for use in the context of second language writing. Each statement in MAWQ is rated on a scale from 1 = strongly disagree to 5 = strongly agree, with a midpoint = 3. The reliability of the questionnaire was acceptable (r = .91).

A Japanese essay evaluation rubric (Shekarabi, 2023) was used to assess the learners' Japanese essays. This rubric assesses Japanese essays on a four-point scale to examine writing performance on several dimensions: content, organization, coherence, Japanese language (grammar, vocabulary, Japanese characters, etc.).

4.3 Procedure

As explained above, to determine the students' Japanese language proficiency (elementary, intermediate, advanced), they answered a Japanese language proficiency test (JLPT). Since there is no writing section in the test, to assess writing ability, the students (n = 46) wrote a descriptive essay in Japanese. The essays were evaluated by two raters based on the Shekarabi (2023) rubric. Agreement between the two raters was examined using Cronbach's alpha, which indicated high inter-rater reliability (α = .84). Based on essay scores, participants were divided into those with higher proficiency (n = 24) and those with lower proficiency (n = 22). For analytical purposes, participants whose essay scores were above the sample mean were classified as the higher writing ability group, whereas those scoring below the sample mean were classified as the lower writing ability group. (For the sake of brevity, these two groups are referred to as the "more-skilled" and "less-skilled" groups, respectively, throughout this paper). Since no participant obtained a score exactly equal to the sample mean, all participants could be assigned to one or the other of the two groups.

5. Results

As shown in Table 1, the MWA of the JFL learners was generally assessed at a relatively favorable level. The overall mean of the subcomponents of MWA indicates that the JFL learners have relatively adequate knowledge in various areas of this skill. In the Cognitive Knowledge section, the Declarative Knowledge subcomponent, with an average of 33.04 and a high percentage of agreement (26.82% agree, 26.07% strongly agree), is higher than the other subcomponents. In contrast, Procedural Knowledge, with an average of 8.02 and a lower percentage of "strongly agree" (10.65%), indicates the learners' relative weakness in this area. In the Cognitive Regulation section, the Monitoring & Revision subcomponent, with an average of 16.47 and the highest percentage of agreement (26.39% strongly agree), indicates that the learners are relatively good at evaluating and revising their writing. Overall, while the language learners have a relatively high awareness of the cognitive and regulatory processes of writing, in some areas such as Procedural and Conditional Knowledge, there is a need to strengthen their metacognitive skills.

Table 1

Descriptive Statistics and Response Distributions for MWA and Subcategories

MWA sub-categories	N	Mean	SD	Strongly disagree (%)	Disagree (%)	No Idea (%)	Agree (%)	Strongly agree (%)
Knowledge of Cognition	72	52.45	8.88	7.22	16.80	27.50	27.99	20.49
Declarative Knowledge	72	33.04	5.83	9.19	14.74	23.18	26.82	26.07
Procedural Knowledge	72	8.02	1.84	1.85	20.37	31.94	35.19	10.65
Conditional Knowledge	72	11.38	3.29	4.86	20.83	38.19	26.40	9.72
Regulation of Cognition	72	39.58	7.12	4.86	17.63	18.66	37.76	21.09
Planning & Drafting	72	13.12	3.09	6.39	21.67	18.61	34.72	18.61
General Strategies	72	9.98	2.29	1.74	18.40	22.57	42.36	14.93
Monitoring & Revision	72	16.47	4.02	5.55	14.29	16.47	37.30	26.39

An independent-samples t-test was conducted to determine whether there were differences in MWA between males and females. MWA scores for each gender were normally distributed as assessed using a Shapiro-Wilk's test ($p > .05$), and there was homogeneity of variances as assessed by Levene's test ($p > .05$). However, the male MWA mean score ($M = 92.23$, $SD = 11.17$) was higher than the female awareness mean score ($M = 91.96$, $SD = 14.17$); however, the results of the t-test showed no statistically significant difference between male and female's MWA levels ($t(70) = -.080$, $p > .05$). Moreover, there was no statistically significant difference between males' and females' MWA sub-categories ($p > .05$) (Table 2). This shows that gender is not a determining factor in determining MWA among JFL learners.

Table 2

MWA and gender

					Independent Samples t-Test		
MWA & Gender	**Gender**	**N**	**Mean**	**SD**	**t**	**df**	**Sig**
MWA & Gender	F	51	91.96	14.17	-0.080	70	0.937
	M	21	92.23	11.17			
MWA sub-categories & Gender							
Knowledge of Cognition & Gender	F	51	52.23	9.29	-0.330	70	0.742
	M	21	53.00	7.96			
Declarative Knowledge & Gender	F	51	33.03	6.20	-0.006	70	0.996
	M	21	33.04	4.95			
Procedural Knowledge &	F	51	7.86	1.76	-1.186	70	0.240

Gender	M	21	8.42	2.01			
Conditional Knowledge & Gender	F	51	11.33	3.48	-0.222	70	0.825
	M	21	11.52	2.83			
Regulation of Cognition & Gender	F	51	39.72	7.63	0.262	70	0.794
	M	21	39.23	5.85			
Planning & Drafting & Gender	F	51	13.17	3.18	0.218	70	0.828
	M	21	13.00	2.96			
General Strategies & Gender	F	51	10.25	2.35	1.567	70	.122
	M	21	9.33	2.03			
Monitoring & Revision & Gender	F	51	16.29	4.36	-0.582	70	0.562
	M	21	16.90	3.11			

A one-way ANOVA was conducted to determine whether the MWA level of JFL learners differed between elementary, intermediate, and advanced learners. Descriptive statistics for the participants are shown in Table 3. The data were normally distributed for each group as assessed by a Shapiro-Wilk test ($p > .05$), and there was homogeneity of variances as assessed by Levene's test ($p > .05$). The result of a one-way ANOVA showed that there was no statistically significant difference between the MWA level of elementary, intermediate, and advanced JFL learners ($F(2, 69) = .304$, $p > .05$). Moreover, there was no statistically significant difference between elementary, intermediate, and advanced JFL learners' MWA sub-categories ($p > .05$) (Table 3). These findings suggest that general language proficiency (as measured by the JLPT) was not significantly associated with differences in MWA.

Table 3

MWA and language proficiency

					ANOVA		
MWA & Language Proficiency (LP)	**LP**	**N**	**Mean**	**SD**	**df**	**F**	**Sig**
MWA & LP	Elementary	22	90.18	12.05	2, 69	0.304	0.739
	Intermediate	24	92.83	14.17			
	Advanced	26	92.88	13.79			
MWA sub-categories & LP							
Knowledge of Cognition & LP	Elementary	22	50.86	9.24	2, 69	0.512	0.601
	Intermediate	24	53.33	9.35			
	Advanced	26	53.00	8.27			
Declarative Knowledge & LP	Elementary	22	31.86	5.71	2, 69	0.749	0.477
	Intermediate	24	33.95	6.55			
	Advanced	26	33.19	5.25			
Procedural Knowledge & LP	Elementary	22	7.90	2.38	2, 69	0.106	0.899
	Intermediate	24	8.00	1.79			
	Advanced	26	8.15	1.37			
Conditional Knowledge & LP	Elementary	22	11.09	3.27	2, 69	0.171	0.844
	Intermediate	24	11.37	3.38			
	Advanced	26	11.65	3.32			
Regulation of Cognition	Elementary	22	39.31	5.52	2, 69	0.039	0.962

& LP	Intermediate	24	39.50	7.22			
	Advanced	26	39.88	8.38			
Planning & Drafting & LP	Elementary	22	12.95	2.71	2, 69	0.157	0.855
	Intermediate	24	13.41	3.01			
	Advanced	26	13.00	3.55			
General Strategies & LP	Elementary	22	10.27	2.31	2, 69	0.483	0.619
	Intermediate	24	9.62	1.99			
	Advanced	26	10.07	2.56			
Monitoring & revision & LP	Elementary	22	16.09	3.32	2, 69	0.185	0.832
	Intermediate	24	16.45	3.95			
	Advanced	26	16.80	4.69			

The sample consisted of 24 more-skilled writers and 22 less-skilled writers. An independent-samples t-test was conducted to determine whether there were any differences in MWA between males and females. MWA mean scores for each gender were normally distributed as assessed by a Shapiro-Wilk's test ($p > .05$), and there was homogeneity of variances as assessed by Levene's test ($p > .05$). More-skilled writers' MWA mean score ($M = 96.54$, $SD = 10.10$) was higher than that of less-skilled writers ($M = 86.13$, $SD = 14.07$). The result of a t-test showed that there was a statistically significant difference between more-skilled and less-skilled writers' MWA level ($t(44) = 2.898$, $p < .005$). Effect size was large ($d = .85$).

Regarding MWA sub-categories and writing ability, there was a statistically significant difference between more-skilled and less-skilled JFL writers' declarative knowledge ($p < .005$). The mean score of the more-skilled JFL writers ($M = 35.58$, $SD = 5.45$) was higher than that of the less-skilled writers ($M = 30.09$, $SD = 5.74$). However, there was no statistically significant difference between more-skilled and less-skilled JFL writers' other MWA sub-categories ($p > .007$) (Table 4). To avoid Type I error, Bonferroni correction was applied ($\alpha = .007$). The findings indicate that more proficient language learners have higher metacognitive awareness, especially in the area of theoretical knowledge related to the writing process.

To examine whether the effect of writing ability on metacognitive writing awareness differed across language proficiency levels, a two-way ANOVA was conducted, with language proficiency and writing ability as between-subjects factors. However, the interaction effect was not statistically significant, $F(2, 42) = 1.33$, $p > .05$, indicating that the relationship between writing ability and metacognitive awareness did not differ significantly across language proficiency levels.

Table 4

MWA Level and Writing Ability (WA)

					Independent Samples t-Test		
MWA & WA	**WA**	**N**	**Mean**	**SD**	**t**	**df**	**Sig**
MWA & WA	More-skilled	24	96.54	10.10	2.898	44	0.005**
	Less-skilled	22	86.13	14.07			
MWA sub-categories & WA							
Knowledge of Cognition & WA	More-skilled	24	55.29	7.73	2.535	44	0.015
	Less-skilled	22	48.72	9.77			
Declarative Knowledge & WA	More-skilled	24	35.58	5.45	3.326	44	0.002**
	Less-skilled	22	30.09	5.74			
Procedural Knowledge & WA	More-skilled	24	8.16	1.57	0.713	44	0.479
	Less-skilled	22	7.72	2.52			
Conditional Knowledge & WA	More-skilled	24	11.54	2.93	0.645	44	0.522
	Less-skilled	22	10.90	3.70			
Regulation of Cognition & WA	More-skilled	24	41.25	5.89	2.111	44	0.040
	Less-skilled	22	37.40	6.44			
Planning & Drafting & WA	More-skilled	24	13.54	2.46	0.858	44	0.396
	Less-skilled	22	12.81	3.23			
General Strategies & WA	More-skilled	24	10.50	1.93	1.913	44	0.062
	Less-skilled	22	9.31	2.25			
Monitoring & revision & WA	More-skilled	24	17.20	3.40	1.854	44	0.070
	Less-skilled	22	15.27	3.67			

** Correlation significant at the 0.01 level (2-tailed)

A Pearson's product-moment correlation was conducted to examine the relationship between MWA and essay-based writing ability among the 46 participants who completed the writing task. Here, writing ability refers to participants' scores on the essay-writing task rather than their general Japanese language proficiency as measured by the JLPT. Preliminary analysis showed that the assumptions of the Pearson correlation test were met and that all variables were normally distributed as assessed by a Shapiro-Wilk's test ($p > .05$), while a Pearson correlation analysis showed a statistically significant moderate positive correlation between overall metacognitive awareness and writing ability in JFL learners ($r(44) = .400$, $p < .005$) (Table 5).

Regarding the sub-categories of metacognitive awareness, a Pearson correlation test showed a statistically significant moderate positive relationship between writing ability and knowledge of cognition ($r(44) = .375$, $p < .05$), declarative knowledge ($r(44) = .448$, $p < .001$), and regulation of cognition ($r(44) = .303$, $p < .05$. No statistically significant correlations were found for the remaining metacognitive sub-categories ($p > .05$) (Table 5). These findings indicate that learners with higher levels of cognitive and regulatory metacognitive awareness tended to achieve better performance on the essay-writing task.

Table 5

Correlation between MWA, its subcategories, and writing ability

MWA & Writing Ability (WA)		Pearson Correlation	Sig. (2-tailed)
MWA & WA	6	0.400	0.005**
MWA sub-categories & WA			
Knowledge of Cognition & WA	6	0.375	0.015*
Declarative Knowledge & WA	6	0.448	0.002**
Procedural Knowledge & WA	6	0.107	0.479
Conditional Knowledge & WA	6	0.097	0.522
Regulation of Cognition & WA	6	0.303	0.040*
Planning & Drafting & WA	6	0.128	0.396
General Strategies & WA	6	0.277	0.062
Monitoring & Revision & WA	6	0.269	0.070

* Correlation significant at the 0.05 level (2-tailed)

** Correlation significant at the 0.01 level (2-tailed)

6. Discussion

This study investigated levels of MWA among Iranian learners of Japanese as a foreign language and examined whether MWA differed according to gender, language proficiency, and writing ability. In addition, relationships between MWA and learners' writing performance were explored. Overall, the findings indicate that MWA was more closely associated with learners' actual writing ability than with their general Japanese language proficiency. Although language proficiency provided an important linguistic foundation, writing ability emerged as a more sensitive indicator of learners' metacognitive engagement during the writing process. These findings contribute to a more nuanced understanding of MWA in the JFL context by distinguishing between learners' general linguistic competence and their ability to regulate language use during authentic writing tasks.

Regarding the first research question (RQ1. What is the MWA level of JFL learners?), the findings demonstrate that the participants generally reported a relatively high level of MWA, with the highest scores observed for declarative knowledge and monitoring and revision strategies. This suggests that the learners were generally aware of the importance of planning, monitoring, and

evaluating their writing while composing texts in Japanese. This result is broadly consistent with previous studies reporting that successful second language writers tend to demonstrate higher levels of metacognitive awareness and strategic regulation during the writing process (Teng, 2020a; Sun et al., 2023; Xu & Zhu, 2024). These findings further support theoretical models of metacognition, which emphasize that effective writing depends not only on linguistic knowledge but also on learners' awareness of how to regulate and evaluate their own cognitive processes during writing (Flavell, 1979; Schraw & Moshman, 1995).

In addition, an interesting pattern emerged across metacognitive subcategories. Declarative knowledge received the highest mean score, whereas conditional knowledge showed comparatively lower levels. This pattern suggests that although learners generally knew what writing strategies were available and recognized their importance, they were less certain about when and under what conditions specific strategies should be applied during writing. Such a distinction is theoretically meaningful because successful writing requires not only knowledge of strategies themselves but also the ability to select and adapt those strategies according to changing writing demands. Previous research has similarly argued that conditional metacognitive knowledge represents one of the most sophisticated dimensions of self-regulated writing because it requires learners to flexibly coordinate multiple cognitive and linguistic resources during text production (Teng, 2020a; Xu & Zhu, 2024).

Relatively lower levels of conditional knowledge may also reflect the particular characteristics of learning Japanese as a foreign language. Unlike many Indo-European languages, Japanese writing requires learners to coordinate multiple writing systems while simultaneously attending to lexical selection, grammatical accuracy, discourse organization, and audience awareness (Rose, 2017; Taele et al., 2020). Managing these concurrent demands increases the cognitive complexity of writing and places greater demands on learners' metacognitive regulation. Therefore, although learners may acquire declarative knowledge of writing strategies through classroom instruction, they may experience greater difficulty in determining when and how those strategies should be implemented effectively in authentic writing tasks. This interpretation provides one possible explanation for why conditional knowledge developed less strongly than declarative knowledge in these learners.

Taken together, these findings suggest that MWA should be viewed as a multidimensional construct rather than a single unified ability. Different components of metacognition appear to develop at different rates and may be influenced by different learning experiences. In response, writing instruction should move beyond simply introducing writing strategies and provide learners with repeated opportunities to practice selecting, adapting, and evaluating appropriate strategies across different writing contexts. Such instruction may help learners transform declarative knowledge into more flexible and transferable metacognitive regulation during writing.

Regarding gender differences, female learners reported significantly higher levels of MWA than male learners. This result is generally consistent with previous studies suggesting that female language learners tend to report greater use of metacognitive learning strategies and self-regulatory behaviors than their male counterparts (Nasim et al., 2024; Oxford, 2017; Teng, 2020b).

One possible explanation is that female learners may engage more actively in planning, monitoring, and evaluating their own learning processes, particularly during cognitively demanding tasks such as academic writing. However, gender differences in metacognition have not been reported consistently across studies, suggesting that contextual factors such as educational environment, instructional practices, and learner characteristics may also influence the development of metacognitive awareness. Thus, gender itself should not be viewed as a direct determinant of metacognitive awareness but rather as one of several learner characteristics that may interact with educational experiences.

In contrast, no statistically significant differences were observed across elementary, intermediate, and advanced learners in their overall MWA or its subcomponents. At first glance, this finding may appear counterintuitive because higher language proficiency is generally expected to facilitate more effective self-regulation during writing. However, previous research has also shown that increases in general language proficiency do not necessarily lead to parallel development of metacognitive awareness, particularly when proficiency is assessed independently of authentic writing performance (Teng, 2020a; Xu & Zhu, 2024). Metacognitive awareness represents learners' ability to regulate cognitive processes rather than simply their accumulation of linguistic knowledge. Consequently, learners with higher levels of vocabulary and grammatical knowledge may not necessarily demonstrate greater awareness of how to plan, monitor, and evaluate their writing.

A further explanation concerns the operationalization of language proficiency in this study. Participants' proficiency levels were determined using the JLPT, which primarily assesses receptive language skills, including vocabulary, grammar, and reading comprehension. However, because the JLPT does not directly assess productive writing, learners with different JLPT proficiency levels may demonstrate similar levels of metacognitive regulation during writing tasks. This interpretation suggests that general language proficiency alone may be insufficient to explain individual variation in MWA.

Unlike language proficiency, writing ability showed a significant relationship with MWA. Learners who demonstrated stronger performance on the authentic essay-writing task also reported significantly higher levels of MWA. This finding is theoretically insightful because the essay-writing task required learners not only to apply linguistic knowledge but also to generate ideas, organize information, monitor linguistic accuracy, and revise their texts throughout the writing process. These processes correspond closely to the planning, monitoring, and evaluation components emphasized in major models of metacognition (Flavell, 1979; Schraw & Moshman, 1995; Teng, 2019).

One noteworthy finding is that MWA differed significantly according to writing ability, whereas no significant differences were found across language proficiency levels. Although writing ability is generally expected to develop alongside overall language proficiency (Xu & Zhu, 2024), the findings suggest that the relationship between these constructs is more complex than is often

assumed. In this study, language proficiency was measured using the JLPT, whereas writing ability was assessed through an authentic essay-writing task. Although related, these two measures capture different dimensions of second language competence. While the JLPT primarily evaluates learners' receptive linguistic knowledge, successful writing requires learners to integrate linguistic knowledge with higher-order cognitive and metacognitive processes, including planning, monitoring, organization, and revision during text production. Accordingly, learners with comparable JLPT proficiency levels may differ substantially in how effectively they regulate and apply that knowledge while composing written texts.

To further examine this issue, a two-way ANOVA was conducted to investigate whether language proficiency moderated the relationship between writing ability and MWA. The interaction effect was not statistically significant, $F(2, 42) = 1.33$, $p = .255$, indicating that the positive association between writing ability and MWA remained relatively stable across language proficiency levels. In other words, the influence of writing ability on metacognitive awareness did not depend on learners' JLPT proficiency level. This additional analysis helps explain the apparent discrepancy between the findings. Rather than suggesting that writing ability develops independently of language proficiency, the results indicate that the two measures contribute different information about learners' writing competence. General language proficiency provides an essential linguistic foundation for writing development, whereas authentic writing performance more directly reflects learners' ability to regulate, monitor, and evaluate their cognitive processes during text production. Thus, the absence of a proficiency effect should not be interpreted as evidence that language proficiency is unimportant; instead, it suggests that receptive linguistic knowledge alone may not adequately explain individual differences in MWA.

This interpretation is broadly consistent with recent research demonstrating that metacognitive writing processes are more closely associated with learners' actual writing performance than with general measures of linguistic knowledge alone (El Madani et al., 2024 ; Sun et al., 2023). At the same time, the findings differ from studies reporting a stronger relationship between general language proficiency and metacognitive awareness. One possible explanation is methodological. Previous studies have often employed comprehensive proficiency measures that include productive language skills, whereas this study classified proficiency using the JLPT, which does not directly assess writing. Consequently, differences across studies may reflect differences in the operationalization of language proficiency rather than genuine theoretical inconsistencies.

7. Conclusion

This study examined MWA among Iranian learners of Japanese as a foreign language and investigated its relationship with gender, language proficiency, and writing ability. Overall, the findings demonstrate that MWA is more closely associated with learners' actual writing performance than with their general language proficiency as measured by the JLPT. While

language proficiency provides an essential linguistic foundation for successful writing, authentic writing ability appears to reflect learners' capacity to regulate, monitor, and evaluate their cognitive processes during text production more directly.

One of the principal contributions of this study is the distinction it draws between general language proficiency and authentic writing ability when examining MWA in the JFL context. Previous studies have often treated these constructs as closely aligned or have relied primarily on general proficiency measures. By separately examining language proficiency, writing ability, and their interaction, the study demonstrates that these variables contribute differently to learners' MWA. Furthermore, the additional two-way ANOVA indicated that language proficiency did not significantly moderate the relationship between writing ability and MWA, suggesting that the positive association between writing ability and metacognitive awareness remained relatively stable across proficiency levels among these learners.

From a pedagogical perspective, the findings suggest that improving learners' writing performance may require instructional approaches that extend beyond the development of vocabulary and grammatical knowledge alone. Because authentic writing engages planning, monitoring, evaluation, and strategic decision-making throughout the writing process, writing instruction should explicitly incorporate opportunities for learners to develop and practice metacognitive regulation alongside linguistic knowledge. Such an approach may better support learners in transforming linguistic competence into effective written communication.

That said, the study is subject to several limitations. First, sample size, particularly for the writing analyses, was relatively modest, which may have reduced the statistical power to detect smaller interaction effects. Second, language proficiency was operationalized using the JLPT, which primarily assesses receptive language skills and does not directly evaluate productive writing. Finally, the cross-sectional design limits causal interpretation of the observed relationships. Future research should therefore examine these variables simultaneously using larger and more diverse samples together with multivariate analytical approaches to better understand complex relationships between language proficiency, writing ability, MWA, and other learner characteristics (e.g., writing motivation, writing anxiety, self-efficacy, learning strategies, and instructional experiences). Longitudinal and intervention studies would also provide valuable evidence regarding how metacognitive awareness develops throughout the process of second language writing instruction.

Finally, these findings suggest that successful second language writing depends not only on what learners know about the language but also on how effectively they regulate and apply that knowledge in authentic writing. Understanding this distinction will help researchers and educators develop more comprehensive approaches to writing instruction and assessment in Japanese as a foreign language.

References

Alamri, B. (2019). Exploring metacognitive strategies employed by ESL writers: Uses and awareness. *International Journal of English Linguistics*, *9*(1), 159 – 168. https://doi.org/10.5539/ijel.v9n1p159

Anderson, N. J. (2002). The role of metacognition in second language teaching and learning. *ERIC Digest, 1*(10), 2–5. https://eric.ed.gov/?id=ED463659

Bai, R., Hu, G., & Gu, P. Y. (2014). The relationship between use of writing strategies and English proficiency in Singapore primary schools. *Asia-Pacific Education Researcher*, *23*, 355–365. https://doi.org/10.1007/s40299-013-0110-0

Efklides, A. (2009). The role of metacognitive experiences in the learning process. *Psicothema, 21*(1), 76–82. https://pubmed.ncbi.nlm.nih.gov/19178860

El Madani, E. M., Larouz, M., Fagroud, M., & Saadallah, Z. (2024). The relationship between writing proficiency in English and metacognitive awareness of writing strategies among EFL university students. *Jurnal Arbitrer*, *11*(3), 373-383. https://doi.org/10.25077/ar.11.3.373-383.2024

Farahian, M., & Avarzamani, F. (2018). Metacognitive awareness of skilled and less-skilled EFL writers. *Asian-Pacific Journal of Second and Foreign Language Education*, *3*(1), 1–17. https://doi.org/10.1186/s40862-018-0052-4

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, *34*(10), 906 – 911. https://doi/10.1037/0003-066X.34.10.906

Habók, A., Magyar, A., & Molnár, G. (2022). English as a foreign language learners' strategy awareness across proficiency levels from the perspective of self-regulated learning meta factors. *Frontiers in Psychology*, *13*, 1019561. https://doi.org/10.3389/fpsyg.2022.1019561

Irvin, A. L. (2017). The female "confidence gap" and feminist pedagogy: Gender dynamics in the active, engaged classroom. In P. Eddy, K. Ward, & T. Khwaja (Eds.), *Critical approaches to women and gender in higher education* (pp. 259–276). Palgrave Macmillan.

Li, Z., Wu, J., Thurston, A., & O'Keeffe, J. (2026). A systematic review of second language (L2) student writers' metacognitive experiences. *British Educational Research Journal*. https://doi.org/10.1002/berj.70109

Nasim, S. M., Mohamed, A. M., Mujeeba, S., & Shaaban, T. S. (2024). Examining gender and major differences in college students' metacognitive awareness of ESP writing skills. *Language Teaching Research Quarterly*, *42*, 278–294. https://doi.org/10.32038/ltrq.2024.42.16

Negretti, R. (2012). Metacognition in student academic writing: A longitudinal study of metacognitive awareness and its relation to task perception, self-regulation, and evaluation of performance. *Written Communication*, *29*(2), 142–179. https://doi.org/10.1177/0741088312438529

Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. *Psychology of Learning and Motivation*, 26, 125–173. https://doi.org/10.1016/S0079-7421(08)60053-5

Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context*. Routledge.

Qin, C., Zhang, R., & Xiao, Y. (2022). A questionnaire-based validation of metacognitive strategies in writing and their predictive effects on the writing performance of English as foreign language student writers. *Frontiers in Psychology*, *13*, 1071907. https://doi.org/10.3389/fpsyg.2022.1071907

Raoofi, S., Chan, S. H., Mukundan, J., & Rashid, S. M. (2014). Metacognition and second/foreign language learning. *English Language Teaching*, *7*(1), 36 – 49. http://dx.doi.org/10.5539/elt.v7n1p36

Rinaldi, P., Pasqualetti, P., Volterra, V., & Caselli, M. C. (2023). Gender differences in early stages of language development. Some evidence and possible explanations. *Journal of Neuroscience Research*, *101*(5), 643–653. https://doi.org/10.1002/jnr.24914

Rose, H. (2017). *The Japanese writing system: Challenges, strategies, and self-regulation for learning kanji.* Multilingual Matters.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*(4), 460–475. https://doi/10.1006/ceps.1994.1033

Schraw, G., & Moshman, D. (1995). Metacognitive theories. *Educational Psychology Review*, *7*(4), 351–371. https://doi.org/10.1007/BF02212307

Shekarabi, Z. (2023). Anxiety and writing performance in online vs. face-to-face feedback condition. *Journal of Foreign Language Research*, *13*(4), 595 – 611. https://doi.org/10.22059/jflr.2023.364850.1065

Sun, Q., Pan, H., & Zhan, J. (2023). Untangling the relationship between English as a foreign language learners' metacognitive experiences and writing proficiency: A mixed-methods approach. *System*, *117*, 103100. https://doi.org/10.1016/j.system.2023.103100

Sun, Q., Zhang, L. J., & Carter, S. (2024). English as a foreign language learners' metacognitive experiences and writing development: Unraveling the process of learning EFL writing. *Learning and Individual Differences*, *115*, 102540. https://doi.org/10.1016/j.lindif.2024.102540

Taele, P., Koh, J. I., & Hammond, T. (2020, April). Kanji workbook: A writing-based intelligent tutoring system for learning proper Japanese kanji writing technique with instructor-emulated assessment. In *Proceedings of the AAAI Conference on Artificial Intelligence 34*(8), 13382–13389). https://doi.org/10.1609/aaai.v34i08.7053

Teng, L. S., & Zhang, L. J. (2016). A questionnaire-based validation of multidimensional models of self-regulated learning strategies. *Modern Language Journal*, *100*(3), 674–701. https://doi.org/10.1111/modl.12339

Teng, M. F. (2019). The role of metacognitive knowledge and regulation in mediating university EFL learners' writing performance. *Innovation in Language Learning and Teaching*, *14*(5), 436–450. https://doi.org/10.1080/17501229.2019.1615493

Teng, M. F. (2020a). The role of metacognitive knowledge and regulation in mediating university EFL learners' writing performance. *Innovation in Language Learning and Teaching*, *14*(5), 436–450. https://doi.org/10.1080/17501229.2019.1615493

Teng, M. F. (2020b). Effects of cooperative–metacognitive instruction on EFL learners' writing and metacognitive awareness. *Asia Pacific Journal of Education*, *42*(2), 179–195. https://doi.org/10.1080/02188791.2020.1835606

Teng, M. F., & Ma, M. (2024). Assessing metacognition-based student feedback literacy for academic writing. *Assessing Writing*, *59*, 100811. https://doi.org/10.1016/j.asw.2024.100811

Teng, M. F., & Yue, M. (2023). Metacognitive writing strategies, critical thinking skills, and academic writing performance: A structural equation modeling approach. *Metacognition and Learning*, *18*(1), 237–260. https://doi.org/10.1007/s11409-022-09328-5

Teng, M. F., & Zhang, L. J. (2021). Development of children's metacognitive knowledge, reading, and writing in English as a foreign language: Evidence from longitudinal data using multilevel models. *British Journal of Educational Psychology*, *91*(4), 1202 – 1230. https://doi.org/10.1111/bjep.12413

Teng, M. F., Qin, C., & Wang, C. (2022). Validation of metacognitive academic writing strategies and the predictive effects on academic writing performance in a foreign language context. *Metacognition and learning*, *17*(1), 167–190. https://doi.org/10.1007/s11409-021-09278-4

Veenman, M. V. J., van Hout-Wolters, B. H. A. M., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and Learning*, *1*(1), 3–14. https://doi.org/10.1007/s11409-006-6893-0

Victori, M. (1999). An analysis of writing knowledge in EFL composing: A case study of two effective and two less effective writers. *System*, *27*(4), 537–555. https://doi.org/10.1016/S0346-251X(99)00049-4

Wang, K., Zhang, L. J., & Cooper, M. (2024). Metacognitive instruction for improving the effectiveness of collaborative writing for EFL learners' writing development. *Asia-Pacific Education Researcher*, 1–13. https://doi.org/10.1007/s40299-024-00886-7

Wenden, A. (1998). Metacognitive knowledge and language learning. *Applied Linguistics*, *19*(4), 515–537. https://doi.org/10.1093/applin/19.4.515

Xu, W., & Zhu, X. (2024). Examining metacognitive strategy use in L1 and L2 task-situated writing: Effects, transferability, and cross-language facilitation. *Metacognition and Learning*, *19*(3), 773–792. https://doi.org/10.1007/s11409-024-09387-w

Xu, W., & Zhu, X. (2024). Examining metacognitive strategy use in L1 and L2 task-situated writing: Effects, transferability, and cross-language facilitation. *Metacognition and Learning*, *19*(3), 773-792. https://doi.org/10.1007/s11409-024-09387-w

Xue, K., Zheng, Y., Papalexandrou, C., Hoogervorst, K., Allen, M., & Rahnev, D. (2024). No gender difference in confidence or metacognitive ability in perceptual decision-making. *iScience*, *27*(12), 1–12. https://doi.org/10.1016/j.isci.2024.111375

Zeynali, S. (2012). Exploring the gender effect on EFL learners' learning strategies. *Theory and Practice in Language Studies*, *2*(8), 1614–1620. https://doi.org/10.4304/tpls.2.8.16141620

Zhang, D., & Zhang, L. J. (2019). Metacognition and self-regulated learning in second/foreign language teaching. In X. A. Gao (Ed.). *Second handbook of English language teaching* (pp. 883–898). Springer.

Zhang, J., & Zhang, L. J. (2024). The effect of feedback on metacognitive strategy use in EFL writing. *Computer Assisted Language Learning*, *37*(5-6), 1198 – 1223. https://doi.org/10.1080/09588221.2022.2069822

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13–39). Academic Press.