The Correlation Between Metacognitive Strategies and Second Language Academic Writing Performance

Liu Siyuan

Xi'an International Studies University,Xi’ an, Shaanxi Province,710000；

Abstract： Metacognitive strategies have a certain influence on second language academic writing. In order to clarify the specific aspects of this effect, this paper reviews the relevant research published in domestic and foreign journals from 2015 to 2025, focusing on whether different types of metacognitive strategies will bring different effects. The results show that there is a positive correlation between metacognitive strategies and L2 academic writing proficiency, but the strength of the correlation depends on the learning environment and the writing task itself. Specifically, the planning strategy is most related to the structure of the article ; monitoring strategy more affects the logic of the article is smooth ; the effect of evaluation strategy is relatively small. In addition, the learner 's own metacognitive experience and the transfer of native language writing strategies will also affect this correlation, while the learner 's language proficiency, the major and the teacher 's teaching methods will also play a role. This article summarizes the existing research results, explains how metacognitive strategies play a role in academic writing, and also provides a theoretical reference for future research. It should be pointed out that the existing research has not done enough in long-term tracking and cross-cultural comparison, and future research needs to pay more attention to dynamic changes and specific situations. Another point is that the effect of the teaching method for metacognitive strategies may vary according to the different learners and writing tasks.

Keywords: metacognitive strategies; academic writing in a second language; correlation; dimensional differences; influence mechanism
DOI： 10.69979/3041-0843.26.02.013

1 Introduction

In higher education, second language academic writing is related to whether learners can communicate ideas smoothly and produce research results. Writers should deal with three problems at the same time : choosing the right words, clarifying the logic of argumentation, and complying with academic norms. Metacognitive strategies, in short, ' think about yourself ', can help writers cope with these complex tasks through planning, monitoring and evaluation. In the past decade, many studies have explored the relationship between metacognitive strategies and academic writing performance. However, different studies have different views on how to classify these strategies, and the discussion on the mode of action behind them is also scattered. To this end, this paper systematically reviews the important literature at home and abroad from 2015 to 2025, focusing on whether and how the various dimensions of metacognitive strategies have an impact. The purpose is to integrate the existing conclusions and provide some practical references for the teaching of second language academic writing. With the rapid promotion of English teaching in the world, it is becoming more and more urgent for teachers and researchers to understand how metacognitive strategies play a role in different educational and linguistic environments. If there is no clear evidence, teaching decisions may be based on scattered or even contradictory research results. Therefore, this review intends to clarify the relationship between the currently known metacognitive strategies and L2 academic writing performance, with particular attention to when this relationship will be enhanced and when it will be weakened.

2 Theoretical foundation

Whether a person can write academic articles in a second language is not good, not only to see the score. It also depends on whether the sentence is not complex, the vocabulary is not rich, the grammar and wording are not accurate, the writing is not smooth, and whether the academic norms are observed, such as the unclear citation format and logic. Together, these can be more comprehensive measure of the level of academic writing. Researchers ' definition of metacognitive strategies in second language academic writing has been changing. Most of them change the old framework to make it more suitable for academic writing. A common starting point is the trichotomy proposed by O 'Malley and Chamot (1990) : planning, monitoring, and evaluation. Later studies have made a lot of expansion or adjustment. For example, He Yunyun (2017) divided four dimensions : advance planning, selective attention, self-monitoring, and self-assessment. Sun et al. (2021) added the concepts of metacognitive perception and online task knowledge. Xu (2024) introduced the dimension of interlingual transfer and verified the applicability of the three-dimensional framework of " planning-monitoring-regulation " in second language academic writing from a cross-linguistic perspective. Based on these studies, this review retains the core framework of ' planning-monitoring-assessing ', and also includes some sub-dimensions that are more meaningful to academic writing. A growing number of researchers have proposed that metacognitive strategies are not only activities in the individual 's mind, but also influenced by social factors such as discourse groups and teaching situations. From the perspective of cognitive load, academic writing consumes a lot of working memory. A good meta-cognitive strategy can split writing into smaller steps, such as thinking first, then demonstrating, and finally changing the language. The theory of self-regulated learning, especially Zimmerman 's cycle model, can also help to understand how metacognitive strategies work at different stages of writing.In the anticipation stage, the planning strategy helps the writer clarify the task requirements and set goals ; in the writing stage, the monitoring strategy allows them to adjust while writing ; in the reflection stage, the evaluation strategy helps them learn from the content they have written and write better next time. In other words, metacognitive strategy is not finished in one time, but a repeated process.

3 The Overall Correlation Between Metacognitive Strategies and Second Language Academic Writing Performance

Most studies agree that there is a positive relationship between metacognitive strategies and second language academic writing performance. However, how strong the relationship is, the answers given by different studies are different, some are moderate, and some are strong. Take an example. Ramadhanti and Yanda (2021) studied the situation of students ' expository writing, and found that the more frequently metacognitive strategies are used, the higher the writing score is, and the correlation coefficient between the two is 0.812. That is to say, the light strategy can explain 66 % of the score difference, which is a strong correlation. By contrast, Xiong Hui et al. (2024) gave a correlation coefficient of 0.386 for non-English major undergraduates, which is at a medium level. Ania and Susanti (2021) conducted a study in an online learning environment and obtained 0.555, which is between the two. Why is there such a big difference ? It is mainly related to research conditions and task types. In the online learning environment, students should rely on themselves to control themselves, and the role of metacognitive strategies is even greater. Task difficulty also has an impact. Writing research papers requires more brains than writing abstracts. Compared with the two, the former is often more relevant. Liu Wenyu and Gao Rongtao (2011) conducted a meta-analysis and found that the overall effect of metacognitive strategy training on second language writing performance was 0.77. This value is not small, indicating that the relationship between strategy use and writing performance is indeed relatively stable. Look at the examples of other languages. The research on Thai high school students learning Chinese writing also shows that metacognitive strategy training not only improves students ' strategy application level, but also improves their writing performance. Similar results can be seen in different languages, indicating that this positive relationship does not happen by chance. There are also some intervention studies that support this conclusion. The teacher clearly teaches metacognitive strategies, and the students ' writing quality can be continuously improved in a semester. Under controllable teaching conditions, this correlation may not only be ' related ', but also have a causal relationship. However, we should also pay attention to one point : correlation is not equal to cause and effect. It may also be the opposite — the writing level is improved, and it is easier for students to realize what they think and what strategies they use. Some longitudinal studies have found that the improvement of writing ability often comes earlier than the improvement of metacognitive strategy use, and the two are mutually influenced and promoted. However, no matter who comes first or who comes after, one thing is clear : this positive relationship is stable in different learning groups. With this alone, researchers and teachers have reason to continue to pay attention.

4 Dimension-Specific Differences in Metacognitive Strategies: Correlation Strength and Pathways of Influence

Not all metacognitive strategies relate to L2 academic writing performance in the same way. Different types of strategies often affect the quality of writing in different ways, and the correlation between them and writing results is also different. The planning strategy mainly appears before writing, which is most related to whether the structure of the article is complete and the task is not accurately grasped. He Yiyun (2017) found that the correlation coefficient between advance planning strategies and writing performance was 0.352. The reason behind this is relatively simple : the writer plans in advance, the effort required in the writing process will be reduced, and it will be easier to rationalize the structure of the article. Wang Weicheng (2015) conducted a study on doctoral students and found that a more specific aspect - ' anticipation of academic norms ' - had a correlation coefficient of 0.41 with whether the format of the thesis met the requirements. This shows that academic writing has special requirements for planning ability, and other types of writing may not necessarily be so. Monitoring strategies play a role in the writing process. The writer checks his language, logic, and compliance with academic rules while writing. Compared with planning and evaluation, monitoring strategies are most closely related to two things : one is that the logic of the article is not smooth, and the other is that it does not conform to academic norms. The correlation coefficient of Lu Wenjun 's (2014) report is 0.46 in terms of normative compliance and 0.48 in terms of coherence, which are higher than other dimensions. The advantage of monitoring is that the writer can find the problem in time and change it before the problem becomes larger. Teng et al. (2022) also confirmed that academic articles written by students who often use monitoring strategies are smoother and more coherent. Xu (2024) found from a cross-linguistic perspective that monitoring strategies can positively predict writing quality in both mother tongue and second language writing, indicating that this ability can be transferred between different languages. The evaluation strategy only works after writing. The writer turns back to see what he has written and reflects on it. Among the three dimensions, the relationship between evaluation strategies and writing performance has always been the weakest. The correlation coefficient of He Yuyun 's (2017) report is only 0.142, which is far lower than that of planning strategy or selective attention strategy. But this does not mean that the evaluation is useless. Jiang Xinli (2022) found that the evaluation strategy indirectly affects the accuracy of writing by encouraging revision, and the correlation with the quality of revision is 0.32. Although it is not high, it is meaningful. The reason why the evaluation strategy is weak is that it relies heavily on the writer 's own reflective ability and the ability to turn feedback into practical improvement. Learners with low proficiency often do not see where the problem is, which limits how much evaluation strategies can help. Recent studies have also found that if students are involved in peer review activities, the correlation between evaluation strategies and writing performance will become stronger, indicating that someone 's interaction can make post-writing reflection more effective. The three dimensions are not isolated. The plan provides a comparable standard for monitoring, monitoring provides information for evaluation, and evaluation affects how the writer writes next time. Without a plan, there is no clear standard for monitoring ; without monitoring, the evaluation lacks real-time data ; there is no evaluation, the next time writing can only rely on guessing. This interdependence means that if only one dimension is trained regardless of the others, the effect may be limited.

5 Mechanisms of Correlation: Mediating and Moderating Variables

The relationship between metacognitive strategies and second language academic writing performance is not a simple straight line.

Several factors will play a role in the middle. Some factors bear the transmission effect from strategy to writing effect, while others change the strength of this relationship. Researchers mainly focus on two mediating factors. The first is metacognitive experience. Jiang Xinli (2022) found that positive metacognitive experience - such as confidence in one 's own writing - was partially located between strategy use and writing performance, with a correlation coefficient of 0.36. The general process is : using strategies to make learners feel more capable, this confidence will reduce writing anxiety, so as to free up more thoughts on writing. The second is the transfer of mother tongue writing strategies. Xu Wandong 's (2024) cross-language study found that the meta-cognitive strategies developed by writers in their mother tongue can be transferred and affect the performance of second language writing. This transfer is not affected by second language proficiency and academic background. That is to say, even if the second language ability is still developing, the good habits developed in the mother tongue can help. Language proficiency, subject background and teaching methods are the three main moderating variables. In terms of language proficiency, Gan Lihua (2009) found that the relationship between strategy use and writing performance was stronger in low-level learners (correlation coefficient 0.49) than in high-level learners (0.33). One possible explanation is that low-level learners need to spend more energy on basic tasks such as grammar and word selection, so good strategies are more helpful to them. High-level learners may have automated these basic activities, and the additional benefits of the strategy are not so obvious. The academic background also has an impact. Wang Weicheng (2015) compared doctoral students of different majors. For science students, the correlation between metacognitive control strategies and writing performance is 0.42 ; liberal arts students this side is 0.35. This difference may be related to the training received by science students. They usually emphasize logical thinking and structured planning. These habits are consistent with some metacognitive strategies. Teaching methods also play a role. Liu Jia and Zhang Wenzhong (2025) compared enabling teaching with traditional teaching. In the mode of empowerment, the correlation between strategy and writing achievement is 0.52 ; under the traditional teaching is 0.37. This shows that if teachers actively train students to use strategies, the relationship between strategies and effects will be closer. Writing anxiety is also a factor. Writers with high anxiety are often reluctant to make critical self-assessment, which weakens the relationship between assessment strategies and writing accuracy. These moderating variables and mediating variables are not independent. They will affect each other. In terms of language proficiency, it can not only affect the direct relationship between strategy and performance, but also affect how much metacognitive experience plays a role.

6 Limitations and Future Prospects

While existing studies have revealed the correlation between metacognitive strategies and academic writing performance in second language learning, three limitations remain: First, sample coverage is uneven, most research focus on undergraduates and graduate students, while doctoral candidates and adult learners are less often. Cross- cultural comparative research is also insufficient. Second, task types are too narrow, research has concentrated on research papers and abstracts. More complex tasks like literature reviews, research reports, and grant proposals have received little attention. Third, the measurement tools are quite different. Some researchers make their own questionnaires, and some take the ready-made scale to change. In this way, the results of different studies are difficult to compare together. The same strategic dimension may be defined and measured in different ways. Fourth, most of the existing research is cross-sectional design, collecting data only at one time point. However, the use of metacognitive strategies will change with the writing process, and this design cannot grasp its dynamic nature.

Future research can start from several directions. One is to expand the research population and cultural background, and look at learners of different educational stages and professional backgrounds. Second, pay more attention to different types of writing tasks to see how strategies are used in complex academic writing tasks and whether there are differences between different genres. The third is to standardize the measurement tools. If there is a well-recognized set of measurement tools for metacognitive strategies in second language academic writing, the results of different studies will be better compared. Another direction is the process-oriented approach. Tracking the same group of writers for a few months or even a whole academic year, we can see how strategy use and writing performance affect each other.

7 Conclusions

This study reviews the important literature at home and abroad from 2015 to 2025, and examines the relationship between metacognitive strategies and second language academic writing performance. There are so few findings. First, there is indeed a positive correlation between metacognitive strategies and L2 academic writing performance. However, the strength of this correlation is different, some studies show that it is moderate, and some show that it is strongly correlated. The differences mainly come from the learning environment and task difficulty. In more complex academic tasks and online learning environments, this correlation will be stronger, indicating that metacognitive strategies can indeed help learners better complete writing tasks. Second, the relationship between different types of metacognitive strategies and writing performance is also different. The planning strategy is used to set goals, organize arguments, allocate time, and has the greatest relationship with the structure of the article and the accuracy of the task. The monitoring strategy is to continuously check and adjust during the writing process, which is most helpful for the article to be in line with the academic norms. Evaluation strategies indirectly affect the quality of writing by encouraging reflection and revision. However, because learners ' reflective ability and the ability to use feedback are different, the overall correlation of evaluation strategies is weaker than the first two. Third, there is not a simple linear relationship between metacognitive strategies and L2 academic writing performance. Several factors will work together. Metacognitive experience is an intermediary-using strategies to make learners more confident. If confidence is enough, there will be less writing anxiety, and more thoughts will be freed to write. In addition, the strategies learned in mother tongue writing can also be transferred to second language writing, which is another way. In general, metacognitive strategies do affect L2 academic writing performance. This review summarizes the currently accepted views and also points out a direction : future research should pay more attention to the differences between learner groups, the differences between different

task types, and how these relationships change over time. Only in this way can the relationship between metacognitive strategies and L2 academic writing performance be seen more clearly.

These findings also indicate that metacognitive strategies do not work alone. For teachers, it is not enough to teach metacognitive strategies as a set of techniques alone, but also to pay attention to students ' language level, metacognitive experience and specific writing task requirements. For researchers, this review suggests that we need more detailed, more process-oriented and longer-term research to see how metacognitive strategies and writing performance influence each other over time.

References

[1]Al-Zubeiry, H. Y. A. (2019). The efficacy of meta-cognitive strategies instruction in enhancing Saudi EFL students' academic writing[J]. International Journal of Social Sciences & Educational Studies, 5(4).
[2]Fitrianti, N. A., & Susanti, A. (2021). EFL students' metacognitive strategies in online-based learning: in relation to their writing quality[J]. Paramasastra: Jurnal Ilmiah Bahasa Sastra dan Pembelajarannya, 8(1), 1-19.
[3]Huang, G. R., & Rawian, R. (2025). Metacognitive factors affecting English as a foreign language (EFL) student-writers' academic writing performance[J]. World Journal of English Language, 15(5).
[4]Huang, Y., & Zhang, L. J. (2022). Facilitating L2 writers' metacognitive strategy use in argumentative writing using a process-genre approach[J]. Frontiers in Psychology, 13, 1-17.
[5]Karlen, Y. (2017). The development of a new instrument to assess metacognitive strategy knowledge about academic writing and its relation to self-regulated writing and writing performance[J]. Journal of Writing Research, 9(1), 61 - 86.
[6]Karlen, Y., & Compagnoni, M. (2017). Implicit theory of writing ability: Relationship to metacognitive strategy knowledge and strategy use in academic writing[J]. Psychology Learning & Teaching, 16(1), 47 - 63.
[7]Negretti, R., & McGrath, L. (2018). Scaffolding genre knowledge and metacognition: Insights from an L2 doctoral research writing course[J]. Journal of Second Language Writing, 40, 12 - 31.
[8]Ramadhanti, D., & Yanda, D. P. (2021). Students' Metacognitive Awareness and Its Impact on Writing Skill[J]. International Journal of Language Education, 5(3), 193-206.
[9]Rosdiana, L. A., Damaianti, V. S., Mulyati, Y., & Sastromiharjo, A. (2023). The role of metacognitive strategies in academic writing skills in higher education[J]. International Journal of Learning, Teaching and Educational, 22(6), 328-344.
[10]Sun, Q., & Zhang, L. J. (2022). Examining the effects of English as a foreign language student-writers' metacognitive experiences on their writing performance[J]. Current Psychology, 1-16.
[11]Sun, Q., Zhang, L. J., & Carter, S. (2021). Investigating students' metacognitive experiences: insights from the English as a foreign language Learners' writing metacognitive experiences questionnaire (EFLLWMEQ)[J]. Frontiers in Psychology, 12(7448812), 1 - 15.