



Article

The Relationship between Writing Proficiency in English and Metacognitive Awareness of Writing Strategies among EFL University Students

El Mehdi El Madani¹, Mohammed Larouz², Mustapha Fagroud³, Zayneb Saadallah⁴

^{1,2,4}Department of English Studies, School of Arts and Humanities, Meknes, Morocco

³National School of Agriculture, Meknes, Morocco

SUBMISSION TRACK

Received: April 29, 2024
 Final Revision: September 14, 2024
 Accepted: September 18, 2024
 Available Online: September 25, 2024

KEYWORDS

Language learning, metacognition, writing, metacognitive awareness, writing strategies

CORRESPONDENCE

E-mail: e.elmadani@edu.umi.ac.ma

ABSTRACT

Scholarly interest in the interplay between metacognition and language learning has notably surged. The expanding corpus of literature uniformly acknowledges the pivotal role that metacognitive knowledge occupies within the framework of language education. Precisely, the metacognitive awareness concerning English as a Foreign Language (EFL) learning strategies empowers learners to supervise, regulate, and optimize their educational endeavors. Metacognitive knowledge encompasses an awareness of one's linguistic proficiency and the strategies pertinent for its enhancement. Equally, a deficiency in such awareness poses significant impediments to the language learning trajectory. Against this backdrop, the present study probes the nexus between metacognitive knowledge and language learning. The specific objective of the current study is to explore the correlation between EFL college students' English writing proficiency and their writing metacognitive awareness. In order to reach this goal, a language proficiency test in writing and a Metacognitive Awareness Writing Questionnaire (MAWQ) were employed to collect the data. The participants in the study included 94 university students belonging to the department of English studies at the faculty of Letters and Human Sciences of Meknes and the Higher school for Training and Education of Kenitra. To analyze the collected data, the study made use of various statistical tools, including Simple Linear Regression and Pearson product-moment correlation. The results of the explored connection presented that there is a significant positive relationship between students' writing performance and their metacognitive awareness of writing, with a p -value of 0.793. The results also showed that writing metacognitive awareness could predict 62% of the variability in writing ability. This study has also precipitated a range of implications related to pedagogy and methodology, alongside recommendations for teachers of English, syllabus designers, academic English studies departments, and coming scholarly inquiries.

I. INTRODUCTION

It has been taken as an ideal view that metaIt has been taken as an ideal view that metacognitive knowledge is a key affecting factor in language learning, in the sense that it provides learners with cognitive support to monitor, control, and improve their learning processes (Ridley et al., 1992). In fact, it has been emphasized that writing is fundamentally a problem-solving task that includes

various processes (Hyland, 2015). Metacognitive awareness of learning strategies paves the path for learners to understand how to learn best, what strategies function better, and being able to adjust their learning method grounded on self-reflection (Martinez, 2006). In this regard, Anderson (2012) states that "metacognition results in critical but healthy reflection and evaluation of one's thinking which may result in making specific changes in

how one learns” (p.170). This implies that being cognizant of one’s thinking system brings about vital realization and awareness of one’s own behaviors, which usually leads to improvement and development. In fact, once a learner acquires and achieves higher levels of metacognitive knowledge in a language, a cognitive metalinguistic foundation is spontaneously created in his mind to foster the incorporation of this specific language (Martinez, 2006).

Moreover, language learners to take control of their learning process are empowered via metacognitive knowledge. The nature of language writing skill has also been determined referring to the concept of attention in the process of writing (Kim, Tian, & Crossley, 2021). In this vein, attention has extensively been identified as an indispensable resource level of the cognitive processing in language writing. It is depicted as the “selection of information for further processing, and attention as effort devoted to maintaining performance on a task” (Sanders, 1998 cited in Kim, Tian, & Crossley, 2021, p.2). Moreover, being cognizant of cognitive strengths and weaknesses puts learners in the best position to make well-versed decisions about strategies, decide on achievable goals, monitor their development, and adjust their approaches as needed (Martinez, 2006). This self-awareness and flexibility contribute to more effective and efficient language learning. In a similar vein, learners with strong metacognitive skills can regulate the planning of their own learning (Martinez, 2006). They can set realistic goals, manage their time effectively, and adjust their efforts based on their understanding of their progress.

The concepts of metamemory and metacomprehension are vital key components of metacognition and play similarly important roles in the process of language learning (Martinez, 2006). The effectiveness of comprehension, whether in reading or listening, can be successful or unsuccessful. Regardless of the actual level of comprehension learners attain, a crucial factor is their metacognitive awareness—their ability to recognize whether their comprehension is adequate or not (Martinez, 2006). Research indicates that this self-assessment can sometimes be significantly inaccurate. In this regard, Martinez (2006) states that “Believing that one understands when one does not is a serious and common error. But even more serious is when students don’t even consider

whether they comprehend but simply take notes or read mechanically” (p.697). In the Moroccan educational context, most university students have inaccurate judgements and visions about their own language strengths and weaknesses (El Madani & Larouz, 2020). The absence of an awareness of students’ level in English and an adequate knowledge about English language learning strategies brings about difficulties in the development of language skills. Hence, this forms the gap on which the present study intends to investigate.

Moreover, there has been an academic interest in the topic and many empirical studies have been conducted investigating the nexus between metacognition and writing proficiency. Despite the importance of metacognitive knowledge and writing proficiency, there is a lack of research exploring this relationship within the Moroccan educational context, particularly where English is learned as a foreign language, thus motivating the present study. In fact, there is a consensus in the literature that metacognitive knowledge significantly influences both the process and the outcomes of language writing (Wang et al, 2009). When engaging in writing tasks, learners with a strong grasp of metacognition can plan their writing process, regulate their cognitive efforts, and reflect on the effectiveness of their compositions. That is, learners who integrate metacognitive strategies into their writing process tend to produce more refined and effective written pieces (Farahian, 2015).

Several studies have been conducted investigating the relationship between writing and metacognitive knowledge. Most of the studies conducted were empirical in nature in the sense that they have employed scientific measurements and field work to explore the theoretically assumed nexus between writing and writing metacognitive awareness. In fact, the majority of practicum-based research on this matter has agreed that writing ability is fundamentally influenced by metacognitive awareness of writing strategies. The following is a brief account of a number of empirical studies that have scrutinized the correlation between the previously mentioned constructs.

Balta (2018) conducted a study which aimed at exploring the correlations among students’ proficiency in writing argumentative texts, their levels of writing anxiety, and their metacognitive awareness. The Metacognitive Awareness Inventory

and the Writing Anxiety Scale designed by Yaman (2010) were employed for data collection. The students' argumentative essays were assessed using the Argumentative Essay Rubric, specially devised for this study. The findings indicated that students displayed inadequate argumentative text writing skills. Notably, students with lower levels of writing anxiety presented greater success in composing argumentative texts in comparison to their peers with moderate and high anxiety levels. Additionally, a modest and positive correlation between argumentative text writing skills and metacognitive awareness was identified. A significant correlation between writing anxiety and metacognitive awareness was also found. Finally, Balta's study underlined that improving students' writing anxiety and enhancing their metacognitive awareness could significantly boost their proficiency in argumentative writing.

Teng (2020) conducted a study to explore how two different types of group support, group feedback (GFG) and self-explanation (SEG), could help Chinese college students improve their English writing skills. A third group served as a control and did not receive any special support. The study looked at how these methods impacted students' writing, their ability to use these skills in new situations, and their understanding of their own learning process (metacognition). The results showed that students receiving group feedback did the best overall, followed by the self-explanation group, and then the control group. Additionally, the group feedback students showed clear evidence of using metacognitive strategies, understood the task well, and knew how to use different learning approaches.

Farsani, Abdollahzadeh, and Beikmohammadi (2019) took a different angle, looking at how self-regulated learning and metacognitive awareness connect with the ability to write persuasive arguments in English. They used questionnaires to measure these factors and also had Iranian graduate students studying to teach English write arguments. Interestingly, even though their model showed a good fit between these factors, the study could not prove that being more aware of your learning or being better at self-regulation directly led to better argumentative writing skills.

In a preceding study, Ferrari, Bouffard, and Rainville (1998) identified that proficient writers relied more significantly on Metacognitive Strategy

Knowledge (MSK) and metacognitive skills in contrast to less proficient writers. Proficient writers exhibited a delayed initiation of writing and demonstrated more accurate evaluations of text structure compared to their less skilled counterparts. 8 thereby achieving a higher standard of writing quality. Furthermore, Lin et al. (2007) conducted interviews to evaluate the metacognitive strategy knowledge of writers ranging from Grade 2 to Grade 8. Their results indicated notable variations in metacognitive strategy knowledge across different grade levels and writing proficiencies. Older students exhibited greater metacognitive strategy knowledge compared to younger peers, and skilled writers showcased a higher degree of metacognitive strategy knowledge in comparison to those with lower writing prowess. Saddler and Graham (2007) reported analogous findings for Grade 4 students, which indicates that skillful writers possessed more extensive metacognitive strategy knowledge compared to less skillful ones, and disparities in metacognitive strategy knowledge corresponded to differences in writing performance.

Similarly, Olinghouse and Graham (2009) discovered a positive correlation between writing planning, metacognitive strategy knowledge, and writing performance in even younger students. As anticipated, Grade 4 students exhibited more profound knowledge of substantive writing processes, higher motivation, and superior writing abilities than Grade 2 students. In a longitudinal study involving college students, Negretti (2012) utilized standardized learning journals to activate students' metacognitive strategy knowledge regarding their writing processes. The results revealed a link between students' metacognitive strategy knowledge, their perception of the task, and the quality of their self-assessment of writing outcomes.

All in all, there are various empirical studies that have investigated the relationship between writing ability and metacognition. These studies collectively highlight the importance of metacognition in the writing process. They showcase how skilled writers engage in higher-order cognitive processes, which involve planning, monitoring, evaluating, and revising their written work. Moreover, these studies have implications for educational practices, emphasizing the significance of teaching metacognitive strategies to

enhance writing skills for learners at various levels of proficiency.

II. METHODS

Research design

The current research endeavors to explore the correlation between metacognition and writing performance. This exploration necessitates testing instruments whose scoring rubrics generate numerical data, positioning this study firmly within the quantitative research paradigm. Furthermore, it seeks to concurrently assess the writing skills of English learners and their metacognitive awareness of writing strategies, utilizing tests and inventories designed to produce a numerical dataset. These methodological considerations have led to the adoption of a Quantitative Cross-sectional Correlational design.

Sample

In this research, the focus was on junior university students belonging to the departments of English at the Faculty of Arts and Human Sciences of Meknes and the Higher School of Training and Education of Kenitra. The rationale behind targeting such demographic was to assess metacognitive awareness of writing strategies among students who have been exposed to study skills courses that cover these fundamental techniques. The broad scope of all Moroccan university students necessitated a practical approach to sampling due to the logistical challenges of encompassing all eligible individuals. Consequently, non-random sampling was utilized for its practicality and relevance to the study's needs.

Within the realm of non-random sampling, several methodologies exist, each requiring a rationale for their use. For this study, non-random convenience sampling was selected as the most suitable method. This decision was based primarily on the accessibility of participants and the feasibility of gathering the sample size within this specific student population. The final sample consisted of ninety-four third-year students, with a gender distribution of thirty males and sixty-four females. Although the initial plan aimed to involve 130 students, practical constraints meant that only 119 were tested, and just 94 completed the two required tests.

Instruments

The English writing test was devised by the

researchers to examine participants on their writing skills based on many rubrics taken from previous writing examinations administered by practitioners of teaching writing. The test was a three-paragraph writing test and had one topic. The topic of the writing test was "Covid-19 pandemic has done more harm than good to our regular lives". The scoring rubrics for the test included taking into consideration the relevance of the content to the topic. Special attention was also given to the coherence and organization of the written work. Last, the correction procedures involved accounting for accurate grammar and mechanics.

The Metacognitive Awareness Writing Questionnaire (MAWQ) is a tool to measure how EFL learners use metacognitive strategies—thinking about their own thinking—during the writing process. It has three main parts:

- **Planning:** This covers how writers prepare for writing, like outlining, thinking about language choices, and setting goals.
- **Monitoring:** This looks at how writers check their work as they go, including aspects like word choice, topic development, revisions, time management, and grammar.
- **Evaluating:** This focuses on how writers assess their finished work. It looks at language quality, organization, content, and areas for improvement.

Essentially, the MAWQ provides a way to see how aware EFL learners are of their own writing process, and how they use that awareness to improve their work.

Data analysis procedures

The study's data analysis involved a methodical approach using descriptive and inferential statistics. Descriptive statistics summarized the sample and variables with means and standard deviations. Pearson correlation and simple linear regression, as inferential statistics, tested hypotheses and examined relationships. The Pearson correlation coefficient (r) measured the strength and direction of the linear relationship between variables. Regression analysis quantified the impact of one variable on another, showing how changes in a predictor variable influenced changes in a response variable. This combined approach using correlation and regression allowed for a comprehensive understanding of the data, supporting or refuting the study's hypotheses.

III. RESULTS

The results section aims to elucidate the correlation between students' English writing performance and their writing metacognitive awareness. Moreover, its primary objective is to address the research question and prove or challenge the associated hypothesis. Presented below are the subsequent research question and corresponding directional hypothesis:

RQ: Is there a correlation between participants' Metacognitive Awareness of Writing Strategies and their English Writing Proficiency?

DH: There is a correlation between participants' Metacognitive Awareness of Writing Strategies and their English Writing Proficiency.

The plain objective of this subsection is to explore the correlation between writing ability and writing metacognitive awareness as quantitative variables. The latter were measured through tests and inventories that have yielded scores as numerical data. It is of worthwhile importance to mention that the dependent variable in this matter is writing ability, while the independent one is writing metacognitive awareness. To highlight the path and the strength of the correlation between these two quantitative variables, Pearson product-moment correlation, along with a scatterplot were conducted and are displayed, described, and discussed in this subsection. Moreover, this subsection accounts for regression analysis to determine the strength of the relationship between the dependent and

independents variables and explore the predictive relationship between them.

The following is the null hypothesis that this subsection investigates:

NH: There is no correlation between participants' Metacognitive Awareness of Writing Strategies and their English Writing Proficiency.

Having scrutinized the aspect of normality distribution and confirmed that writing ability test scores are normally distributed, it is indispensable to account and check the linearity and homoscedasticity through the analysis of a scatterplot for the correlation between writing performance in English and metacognitive awareness of writing. Figure 1 shows a scatter plot of the correlational relationship between writing ability (WA) and writing metacognitive awareness (WMA) tests:

Figure 1 illustrates the scatterplot depicting the distribution of the data of the two quantitative variables under investigation. The data points are dispersed in a relatively uniform manner, forming an upward straight line. The initial observation suggests a linear relationship between writing performance and writing metacognitive awareness scores. This is visually supported by the consistent distance between data points and the line, and further reinforced by the R^2 linear value of 0.62, which indicates a substantial portion of the variance in writing performance can be explained

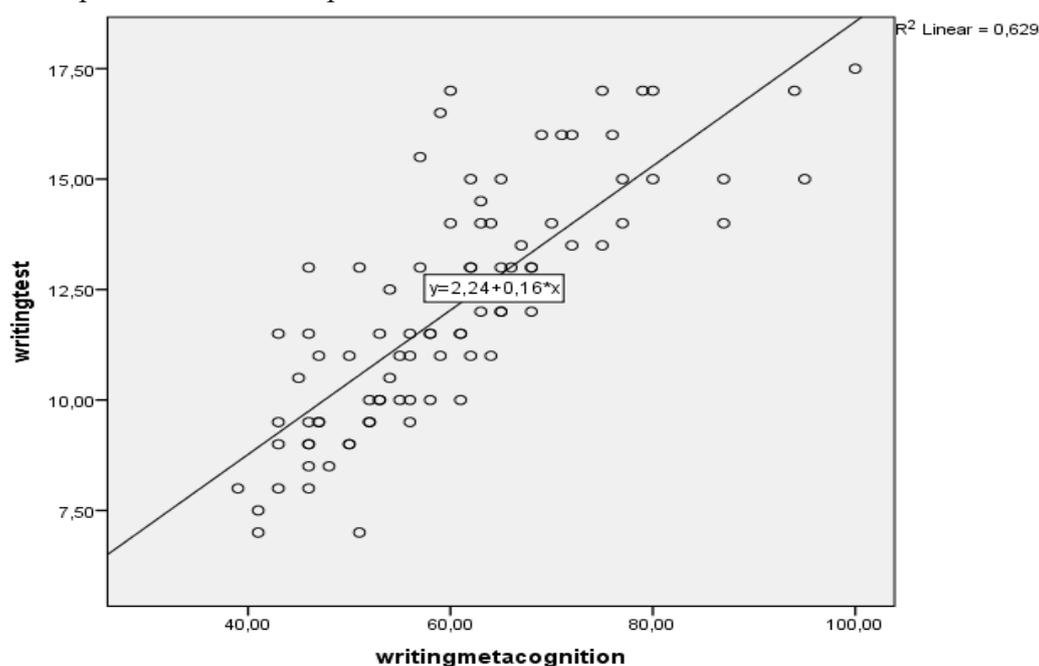


Figure 1. The Scatterplot of the Correlation between WA and WMA Tests

Table 1. Correlation between WA and WMA Tests

		writing test	writing metacognition
writingtest	Pearson Correlation	1	,793**
	Sig. (2-tailed)		,000
	N	94	94
writingmetacognition	Pearson Correlation	,793**	1
	Sig. (2-tailed)	,000	
	N	94	94

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

Table 2. Model Summary for WA and WMA

Model	R	R Square	Std. Error of the Estimate
1	,793 ^a	,629	1,58898

Table 3. ANOVA for Writing performance and Writing Metacognition

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	393,425	1	393,425	155,820	,000 ^b
	Residual	232,288	92	2,525		
	Total	625,713	93			

a. Dependent Variable: writingtest

b. Predictors: (Constant), writingmetacognition

Table 4. Coefficients for Writing performance and Writing Metacognition

Model	Unstandardized Coefficients				
B		Std. Error		t	Sig.
1	(Constant)	2,238	,808	2,770	,007
	writingmetacognition	,163	,013	12,483	,000

by metacognitive awareness. Following this visual assessment, a Pearson product-moment correlation test was employed to statistically confirm and quantify the strength of this observed relationship.

Table 1 shows the results of a correlation analysis, examining the connection between how well participants did on the English writing test and their scores on the questionnaire measuring their metacognitive awareness of writing (MAWQ). The correlation coefficient (ρ -value) of 0.79 shows a significant positive correlational relationship. This means that participants who scored higher on the MAWQ also tended to perform better on the writing test, suggesting a strong link between metacognitive awareness and writing performance. To further examine the existence or absence of a predictive correlation between writing as the dependent variable and metacognitive awareness of writing as the independent variable.

In Table 2, the values for R and R square are displayed and calculated. The R value, which

represents the simple correlation, is determined to be 0.79. This value indicates a strong level of correlation between the variables. Additionally, the R^2 value indicates the total variance in the dependent variable (writing performance) that can be explained by the independent variable (writing metacognitive awareness). The value presented in the table demonstrates that 62% of the variance in the dependent variable can be accounted for by the independent variable, indicating a substantial amount of variation. similarly, writing

$$\text{Writing performance} = 2.238 + 0.163 * \text{Writing metacognitive awareness}$$

metacognitive awareness has been identified as a significant predictor, explaining 62% of the variability in writing ability.

As can be seen, the ANOVA test results for writing performance and writing metacognitive awareness are shown in table 3. The table displays results for how well the regression model and

equation suit and predict the dependent variable, writing ability. These results show that the sig value is 0.000 ($p < 0.01$), which indicates that the regression model predicted writing ability significantly well. More comprehensive details regarding the predictive relationship between writing ability and writing metacognitive awareness, as well as the equation representing this relationship, can be found in Table 4.

The regression equation indicating the correlational relationship between writing performance and metacognitive awareness of writing is given as

In this equation, the intercept is 2.238, indicating the expected writing ability when writing metacognitive awareness is zero. The coefficient for writing metacognitive awareness is 0.163, suggesting that for every one-unit increase in writing metacognitive awareness, writing performance is expected to increase by 0.163 units. The table provides additional statistical information related to the regression model. The standardized Beta coefficient of 0.79 indicates that a one-unit variation of one standard deviation in students' writing metacognitive awareness leads to a 0.79-unit variation in their writing ability. The t-test results, along with the significance value ($t = 12.48$, $p < .001$), imply that the Beta coefficient is suggestively different from zero, indicating the statistical worth of this value.

All in all, this study employed a multifaceted statistical approach to thoroughly examine the connection between students' English writing performance and their metacognitive awareness of writing. The initial visual analysis using a scatterplot suggested a linear relationship, further confirmed by a strong positive correlation (ρ -value = 0.793) revealed through Pearson correlation analysis. This highlighted a significant association between writing ability and metacognitive awareness.

Additionally, a bivariate simple linear regression analysis was employed to explore the predictive nature of the relationship between the variables. The findings demonstrated that students' writing metacognitive awareness could account for 62% of the variance in their writing ability. Furthermore, the results indicated that pupils with advanced levels of metacognitive awareness of writing were anticipated to be more proficient writers, and any variations in their writing metacognitive awareness would impact

their writing performance. These results, derived from the correlation and regression analysis, provide valuable insights into the relationship between writing ability and writing metacognitive awareness.

IV. DISCUSSION

The results of the research question in this studyThe results of the research question in this study revealed a significant positive relationship between students' scores in the writing performance in English test and their metacognitive awareness of writing strategies. Furthermore, it was demonstrated that writing metacognitive awareness plays a crucial role in enhancing writing performance. This finding accepts the research hypothesis of the study, which proposes that there is a relationship between students' metacognitive awareness of writing strategies and their English writing ability. The results suggest that the metacognitive knowledge on writing contributes to the development of English writing skills. Importantly, this finding is consistent with previous empirical studies that have also acknowledged the positive relationship between writing metacognitive awareness and writing ability.

This strong positive relationship between writing ability and writing metacognitive awareness has theoretically and empirically been confirmed in multiple previous studies. Flower and Hayes (1981) assert that writing metacognition boosts students' knowledge and awareness of their own writing processes, strategies, and the ability to monitor and regulate their writing behavior. It involves understanding one's strengths and weaknesses, setting goals, planning, revising, and reflecting on the writing process. In fact, effectively overseeing and controlling one's own writing process constitutes a central element of proficient self-regulated academic writing (Hacker et al., 2009; Zimmerman & Risemberg, 1997; Cited in Karlen, 2017). According to Resnick (1987), the process of writing, similar to other cognitive tasks involving complex problem-solving, necessitates a range of cognitive 'processes to keep track of one's own understanding, to initiate review or rehearsal activities when needed, and to deliberately organize one's attention and other resources in order to learn something' (p. 17, Cited in Farsani, Abdollahzadeh, & Beikmohammadi, 2019).

Another vital study was conducted by Sun

and Zhang (2020) in which he investigated the relationship between English writing ability and writing metacognitive strategies. The results indicated that writing metacognitive strategies such as advanced planning and selective attention were found to be important factors in influencing students' English writing. Moreover, Graham and Harris (2000) drew the conclusion that self-regulated learning and metacognitive awareness are key factors in learners' writing performance. These elements are believed to contribute to the development of learners' competence and enhance their performance in writing tasks. In a study conducted by Wu (2006) involving Chinese EFL students, the focus was on exploring the sort, components, and features of metacognitive experiences in writing. The researchers employed various empirical methods, including a horizontal study, a longitudinal study, and a large-scale questionnaire. The findings indicated that metacognitive teaching had an encouraging impact on learners' metacognitive practices and their EFL writing abilities.

Similarly, Nguyen and Gu (2013) conducted a study aiming to enhance the writing skills of Vietnamese university EFL students through strategy-based metacognitive training. The participants underwent nine training sessions focused on metacognitive strategies. Both quantitative and qualitative data analysis demonstrated that the learners who received the training were more inclined to engage in self-regulation during writing tasks compared to those in the other two groups who did not receive the training.

In another study by Teng (2016) including Chinese tertiary-level EFL students, three groups were formed: one group receiving metacognitive teaching plus cooperative learning, another group receiving metacognitive teaching only, and a control group. The results indicated that the group getting metacognitive teaching plus cooperative learning exhibited the most significant development in both writing skills and metacognitive regulation. Taken together, these pieces of research provide evidence for the positive effects of metacognitive instruction on learners' metacognitive experiences, self-regulation, and overall writing performance in various EFL contexts.

As far as the findings of the research question of the present research are concerned, the linear

relationship between writing ability and writing metacognitive awareness, based on a scatterplot analysis, suggests that as a learner's writing metacognitive awareness increases, their writing ability also increases proportionally. This implies that learners with higher metacognitive awareness are more likely to possess stronger writing abilities in the context of their writing process. The 'planning process' of metacognition encapsulates three sub-processes namely, 'Generating', 'Organizing' and 'Goal-Setting'. The major role of the planning process is to "establish a writing plan from (1) domain knowledge retrieved from Long Term Memory, and (2) information extracted from the task environment" (Alamargot & Chanquoy, 2001; p.5). Therefore, students are better equipped to monitor and control their writing performance, set appropriate goals, and engage in effective planning and revision strategies.

Since writing metacognitive awareness encapsulates being conscious of one's writing goals, monitoring and evaluating the effectiveness of writing strategies, and making adjustments as needed, it is a crucial aspect of effective writing, as it allows students to regulate their cognitive processes, self-reflect, and improve their writing skills. That is, the strong positive relationship between students' writing ability and their writing metacognitive awareness can be explained by the fact that metacognitive awareness plays a vital role in the development of writing skills. When students are aware of their thinking processes and strategies while writing, they are better equipped to self-regulate, reflect on their writing goals, evaluate their progress, and make necessary adjustments to improve their writing. By employing effective metacognitive strategies, students can enhance their planning, drafting, revising, and editing skills, leading to improved overall writing ability. Additionally, students with high writing ability may naturally exhibit a greater level of metacognitive awareness, as they have already developed effective writing strategies through practice and experience. Conversely, students with lower writing ability may benefit from explicit instruction and guidance in developing metacognitive awareness to enhance their writing skills.

With reference to the predictive relationship found between writing ability and writing metacognitive awareness, copious studies provide empirical evidence supporting this relationship. In a

study by Li and Zhang (2021), a positive correlation was found between metacognitive awareness and writing performance among Chinese university students. Similar findings were reported by Huang and Zhang (2020), who found that metacognitive awareness significantly predicted the writing performance of English as a second language (ESL) students. The fact that 62% of the variance in students' writing ability can be accounted for by their writing metacognitive awareness implies a strong predictive relationship between these two factors. In other words, students who have advanced levels of metacognitive awareness tend to have better writing abilities. This finding suggests that metacognitive awareness plays a significant role in shaping and influencing students' writing performance.

The large percentage of variance accounted for (62%) indicates that writing metacognitive awareness is a substantial contributor to writing ability. This suggests that students who are aware of and consciously control their thinking processes during writing tasks, such as planning, organizing, monitoring, and evaluating their writing, are more likely to exhibit improved writing skills. This predictive relationship aligns with theoretical perspectives, such as the socio-cognitive model of writing, which emphasize the influence of metacognitive processes on writing performance. It suggests that students with higher metacognitive awareness engage in more effective planning, revising, and self-regulatory strategies, leading to better writing outcomes.

The results, on one hand, supported Flavell's theory of metacognition that suggests that metacognition involves monitoring and controlling cognitive processes. The results of the present study supported the application of this theory in the context of writing. This reinforced the idea that metacognition plays a crucial role in enhancing writing cognitive skills. Furthermore, the study contributed to the theoretical convention of the connection between writing proficiency and metacognitive awareness. Finding a positive strong correlation provided empirical evidence that supported the fact that learners who showcase a higher level of metacognitive awareness regarding their writing process tend to be more capable at writing.

The relationship between writing proficiency and metacognitive awareness yielded contributions

for the existing literature on educational psychology. The findings highlighted the importance of teaching and fostering metacognitive skills alongside writing instruction. This aligns with the idea that students can become more effective writers by not only improving their writing techniques but also by becoming more aware of their writing strategies. Moreover, applying this concept to writing highlights the importance of students' ability to monitor and regulate their writing processes. Through their awareness of their thought patterns, planning strategies, and self-evaluation techniques during writing, students can make informed decisions about how to approach different writing tasks more effectively.

On another hand, the findings of the relationship between writing and metacognition triggered contributions for the field of education. These findings could influence writing pedagogy by encouraging a shift from solely focusing on grammar and style to emphasizing metacognitive processes. Teachers can integrate activities that prompt pupils to reflect on their writing choices, set objectives, and evaluate their development, leading to more effective writing development. Additionally, assessment practices can be refined based on the findings. That is, evaluating students' writing proficiency might involve assessing not only the final written product but also their understanding of their own writing processes. This could be achieved through self-assessment, reflective writing tasks, or interviews where students discuss their writing strategies.

IV. CONCLUSION

Significant findings and discussions have been yielded for the analysis of the research question in this research endeavor. The examination of the scatterplot visually showed a linear association between participants' writing performance and their awareness of metacognitive processes during writing. This finding implies that students with advanced levels of metacognitive awareness are more likely to exhibit better writing skills. The principal implications of this relationship emphasize the importance of promoting metacognitive awareness through explicit instruction, which has the potential to enhance writing abilities. Furthermore, the results have highlighted observed evidence supporting a significant positive correlation between writing ability and metacognitive awareness of writing strategies. Lastly, the results discussed within

this relationship underscore the vital role of metacognitive awareness in foreseeing pupils' writing abilities. Participants with advanced levels of metacognitive awareness tend to be proficient in writing.

ETHICS STATEMENT

This study confirms that the relevant informed consent was obtained from the participants.

CREDIT AUTHOR STATEMENT

EL Mehdi El Madani: Collected data, administered the test and questionnaire, developed the methodology, analyzed data, drafted the manuscript, and revised the content; **Mohammed Larouz:** Supervised, validated, critically reviewed,

wrote, and edited the manuscript; **Mustapha Fagroud:** Critically reviewed, wrote, and edited the manuscript; **Zayneb Saadallah:** proofread, wrote, and edited the manuscript.

ACKNOWLEDGEMENTS

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

DECLARATION OF COMPETING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

- Alamargot, D., & Chanquoy, L. (2001). *Through the models of writing: with commentaries* by Ronald T. Kellogg & John R. Hayes (Vol. 9). Springer Science & Business Media.
- Anderson, N. J. (2012). *Metacognition: Awareness of language learning*. In Psychology for language learning (pp. 169-187). Palgrave Macmillan, London.
- Balta, E. E. (2018). The Relationships among Writing Skills, Writing Anxiety and Metacognitive Awareness. *Journal of Education and Learning*, 7(3), 233-241.
- Bryman, A. (2016). *Social research methods*. Oxford university press.
- El Madani, E., & Larouz, M. (2020). *An Investigation into the relationship between French and English reading abilities: freshmen students of the English department at meknes as a case study*. *International Journal of Advance Study and Research Work*, 3(5), 30-48.
- Farahian, M. (2015). *Assessing EFL learners' writing metacognitive awareness*. *Journal of Language and Linguistic Studies*, 11(2), 39-51.
- Farahian, M. (2017). *Developing and validating a metacognitive writing questionnaire for EFL learners*. *Issues in Educational Research*, 27(4), 736-750.
- Farsani, M. A., Abdollahzadeh, E., & Beikmohammadi, M. (2019). *Self-regulated Learning, Metacognitive Awareness, and Argumentative writing: A Structural Equation Modeling Approach*. *Writing & Pedagogy*, 11(2).
- Ferrari, M., Bouffard, T., & Rainville, L. (1998). *What makes a good writer? Differences in good and poor writers' self-regulation of writing*. *Instructional Science*, 26(6), 473-488.
- Flower, L.S., & Hayes, J.R. (1980). *The dynamic of composing: Making plans and juggling constraints*. In L.W. Gregg, & E.R. Steinberg (Eds). *Cognitive processes in writing*, (pp.31-50). Hillsdale, N.J.:Erlbaum.
- Graham, S., & R. Harris, K. (2000). *The role of self-regulation and transcription skills in writing and writing development*. *Educational psychologist*, 35(1), 3-12.
- Hayes, J. R., & Berninger, V. W. (2014). *Cognitive processes in writing: A framework*. In B. Arfe, J. Dockrell, & V. W. Berninger (Eds.), *Writing development in children with hearing loss, dyslexia, or oral language problems* (pp. 3–15). Oxford, UK: Oxford University Press.
- Huang, Y., & Zhang, L. J. (2020). *Facilitating L2 writers' metacognitive strategy use in argumentative*

writing using a process-genre approach. *Frontiers in Psychology*, 13, 1036831.

- Hyland, K. (2015). *Teaching and researching writing*. Routledge.
- 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*. *Journal of Writing Research*, 9(1), 61-86.
- Kim, M., Tian, Y., & Crossley, S. A. (2021). *Exploring the relationships among cognitive and linguistic resources, writing processes, and written products in second language writing*. *Journal of Second Language Writing*, 53, 100824.
- Lin, S.-J. C., Monroe, B. W., & Troia, G. A. (2007). *Development of writing knowledge in grades 2–8: A comparison of typically developing writers and their struggling peers*. *Reading & Writing Quarterly*, 23(3), 207-230.
- Martinez, M. E. (2006). *What is metacognition?*. *Phi delta kappan*, 87(9), 696-699.
- 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.
- Nguyen, L. T. C., & Gu, Y. (2013). *Strategy-based instruction: A learner-focused approach to developing learner autonomy*. *Language Teaching Research*, 17(1), 9-30.
- Olinghouse, N. G., & Graham, S. (2009). *The relationship between the discourse knowledge and the writing performance of elementary-grade students*. *Journal of Educational Psychology*, 101(1), 37-50.
- Ridley, D.S., Schutz, P.A., Glanz, R.S., and Weinstein, C.E. (1992). *Self-regulated learning: the interactive influence of metacognitive awareness and goal-setting*. *Journal of Experimental Education*, 60, 293-306.
- Saddler, B., & Graham, S. (2007). *The relationship between writing knowledge and writing performance among more and less skilled writers*. *Reading & Writing Quarterly*, 23(3), 231-247.
- Sun, Q., & Zhang, L. J. (2022). *Examining the effects of English as a foreign language student-writers' metacognitive experiences on their writing performance*. *Current Psychology*, 1-16.
- Teng, F. (2016). *Immediate and delayed effects of embedded metacognitive instruction on Chinese EFL students' English writing and regulation of cognition*. *Thinking Skills and Creativity*, 22, 289-302.
- Teng, F. (2020). *Tertiary-level students' English writing performance and metacognitive awareness: A group metacognitive support perspective*. *Scandinavian Journal of Educational Research*, 64(4), 551-568.
- Wang, J., Spencer, K., & Xing, M. (2009). *Metacognitive beliefs and strategies in learning Chinese as a foreign language*. *System*, 37(1), 46-56.
- Wu, H. Y. (2006). *Metacognitive experiences in college students' EFL writing*. *Foreign Languages and Their Teaching*, (3), 28–30.
- Zhang, H., & Li, Y. (2021). *Integrating active learning activities and metacognition into STEM writing courses*. *Advances in Physiology Education*, 45(4), 902-907.