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The Correlation between Iraqi EFL University Students' Metacognitive Awareness and Writing Performance

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Abstract
The need for metacognitive awareness for effective writing is being increasingly acknowledged. Examining how Iraqi EFL university students' metacognitive awareness levels correlate with their writing abilities is the primary goal of this research. Similarly, for the 2022–2023 school year, 360 students from various Iraqi EFL universities made up the study's sample. A writing performance exam and a questionnaire designed by Schraw and Dennison (1994) were utilized to assess students' metacognitive awareness and writing abilities, respectively, to accomplish this study's goals. Researchers used descriptive statistics and Pearson's correlation coefficient to determine the association. According to the study's findings, students' metacognitive awareness was significantly correlated with their writing skills. The finding proved that improving students' writing performance required metacognitive awareness in language learning. Additionally, the findings indicate a favorable association between metacognitive awareness and writing proficiency. The study searched to answer the following questions: what is the Correlation Between Iraqi EFL University Students' metacognitive awareness and writing performance? This study aims to determine the relationship between Iraqi EFL University Students' metacognitive awareness and their writing performance.
Keywords: Cognition, Iraqi EFL university Students, metacognitive awareness, regulation, writing performance
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Introduction

The trait of metacognitive awareness has been acknowledged as indicative of a writer's success, as demonstrated by the research conducted by Azizi, Nemati, and Estahbanati (2017). The concept of metacognition, which refers to the process of thinking about one's thoughts or cognition, has emerged as a prominent area of investigation within cognitive and developmental psychology. It is widely recognized that metacognition has significant implications for human cognition across various contexts (Farahian,2015). There is a prevailing argument suggesting that learners who possess metacognitive awareness are capable of actively monitoring and regulating the efficacy of their learning processes, as well as exerting control over their problem-solving behaviors. According to Flavell (1987), metacognitive awareness refers to the segment of an individual's accumulated information that pertains to mental or psychological aspects (p.21).

Metacognitive awareness was defined by Gutterman (2003) as the capacity to understand and use learner's information to acquire more knowledge and the ability to recognize learner's learning process consciously. Learning and being aware of one's knowledge determines one's level of understanding, performance, and achievement. Since it helps students transfer knowledge, abilities, and strategies to new settings, Schraw (1998) has also recognized it as a factor in developing self-regulated learning.

El-Hindi (1996) determined how metacognitive instruction affected students' abilities to reflect on and improve reading and writing processes. After receiving the instruction, students in their first year of college who participated in a summer program at their institution showed signs of increased metacognitive awareness. A study by Negretti (2012) aimed to examine how students' metacognitive awareness and perception of their writing task were affected by strategic decisions. The result of this trial was also comparable. According to the study's findings, students' metacognitive skills were significantly related to their writing performance. She also analyzed the students' developing self-awareness during the lesson(Kadhim & Al-Bakri, 2023).

Research by Azizi, Nemati, and Estahbanati (2017) on the effect of metacognitive awareness on Iranian students' writing performance also found a similar consequence. According to their study, the students' use of metacognitive methods was associated with higher writing performance. The purpose of this study was to examine how well Iranian EFL students can understand their learning processes when they employ various writing methods. Furthermore, it investigated how participants' metacognitive awareness of writing strategies affected their performance in writing in a second language (L2). Using metacognitive methods including planning, monitoring, evaluating, and self-awareness was found to be significantly associated with better writing performance of EFL students (Ali, et al., 2022 & Bairmani, et al., 2022).

Acquiring performance in a foreign language, particularly in the domain of writing, poses more significant challenges compared to other English language abilities. It is commonplace for learners to experience a range of negative emotions, including anxiety, dread, and diminished motivation, particularly within the context of foreign language programs, specifically those focused on writing. Writing anxiety is a significant obstacle for English students because of they lack practice in written expression (Genç & Yayli, 2019).

Writing in a foreign language is more than just a mental and emotional process; it is a complex system affected by the learner's unique personality, background, and environment. These factors encompass institutional demands, parental and societal expectations, instructional and evaluative practices, motivation, personality traits, self-assurance, the learner's beliefs,

performance in the second language, and even demographic variables such as gender and years of schooling (Cheng, 2004).

In this study, the researcher aimed to determine if students' metacognitive awareness significantly correlates with their writing performance. The researcher had some context to work with for this investigation because it based on previous studies. This study aims to find out:

1. Iraqi EFL University students' level of Metacognitive awareness.
2. Iraqi EFL University students' level of Writing performance.
3. The Correlation between Metacognitive Awareness and Writing Performance of Iraqi EFL university students.

Literature Review

Flavell (1979) defines metacognition as the conscious regulation or control of an individual's knowledge, along with the awareness or understanding of a learner's mental processes, their effective, and their outcomes. Metacoglearningnitive knowledge refers to the awareness of the factors that affect the outcomes of mental processes. These encompass tasks, individuals, and tactics. Metacognitive knowledge comprises three components: declarative knowledge (learning what), procedural knowledge (knowing how), and conditional knowledge (learning why), which are essential for the effective deployment of strategies. Mayer (1998) highlights the importance of metacognition, noting that, when combined with motivation and aptitude, metacognitive information can predict successful problem-solving outcomes. The significance of metacognition in reading ability is considerable. Boekaerts and Corno (2005) stated that language learners must engage actively in the learning processes. Learners should be capable of planning, controlling, and organizing their mental processes concerning their behaviors and attitudes.academic

Consequently, language learners must possess high metacognitive skills to engage actively in the learning process and achieve success. Academic intrinsic motivation plays a significant role in human activities and the learning process, enabling learners to excel in their educational endeavors. Learners must actively participate in the learning process and serve as information recipients from the perspective of psychologists, necessitating deep involvement and full engagement of students (Bairmani et al., 2022; Dehham et al., 2022).

Some of the studies showed that if students possess a genuine interest and intrinsic motivation in the subject they learn, the optimum learning outcomes are achieved (Cerasoli, Nicklin, et al. 2014); (DePasque & Tricomi 2015) and (Ryan & Deci 2000). This is because students can encounter academic difficulties and challenges with suitable adaptability and flexibility if they equipped with intrinsic motivation. Students can get thebenefit of utilizing the strategies under metacognition strategies. Besides, students can use metacognitive skills to enhance learning (Fisher, et al. 2015) and (Barenberg & Dutke 2019). According to Pintrich, it is more likely that students will use various thinking, problem-solving, and learning processes.

According to Erenler and Cetin (2019), undergraduate students showed higher cognition knowledge. However, graduate students demonstrated higher cognition knowledge when compared to undergraduates (Medina, et al., 2017). Teachers' commitment regarded as the significant indicator to endorse success or failure in the academic system. Language learners lose their self-efficacy because of teachers' minimal commitment. As a result, in the first years of learning students, instead of using a deeper strategic approach, move towards a surface learning approach (Güvendir,2016).

Metacognitive Writing Strategies

Metacognitive writing strategies used to monitor the writing process consciously and evaluate the effectiveness of writing actions (Xiao, 2016, p.20). It is feasible to describe these approaches as those that "are used to evaluate the effectiveness of writing actions." Learning a language necessitates the utilization of several metacognitive methods. According to Oxford (1990, p.136), employing metacognitive writing methods, such as attentiveness and reviewing, can assist learners in sustaining their focus and concentration during the writing process. Furthermore, these tactics facilitate learners in devising efficient and successful learning plans. Furthermore, implementing metacognitive writing strategies facilitates language acquisition, as it enables learners to actively engage in self-awareness and reflection regarding their learning experiences (Rahimi & Katal, 2012). Furthermore, the capacity of learners to adjust their learning approach to novel situations and assignments enhanced by exposure to a broader range of tactics (Chick, 2014).

Metacognitive writing strategies have been found to have a crucial role in fostering greater levels of autonomy and independence in the learning process (Diaz, 2013; Mu, 2005). Therefore, using metacognitive writing strategies can enhance learning outcomes and boost performance, particularly for individuals facing difficulties in the learning process.

According to Anderson (2002, p.2), Metacognitive writing processes can be classified into three distinct categories: planning, monitoring, and assessing.

Planning

Planning encompasses the mental process of deliberating upon and directing attention toward the aims to attain and the strategies to use in their attainment (Anderson, 2002). Self-interrogation techniques are used to ascertain different elements like the aim, audience, and strategies to use (Diaz, 2013; Xiao, 2016). In their seminal work, Flower and Hayes (1981) delineated three distinct planning processes, namely idea generation, goal formulation, and organization.

Monitoring

Monitoring refers to an ability to regulate behavior to accommodate social situations. It also indicates self-monitoring (Anderson, 2002). Self-monitoring is another name for monitoring. (Xiao, 2016). During the process of composition, it is necessary to evaluate, self-question, confirm, manage, direct, and arrange the writing performance (Diaz, 2013 & Xiao,2016). This is all done to ensure that the writing performance is successful. Learners gain an advantage from monitoring since it helps them to analyze the efficiency of writing processes and identify whether ideas should be altered or added to the writing.

Evaluation/ "self-evaluating"

Evaluation refers to the process of assessing and determining the efficacy and quality of an individual's composition concerning the desired objectives (Anderson, 2002; Nemouchi, 2017; Xiao, 2016). Furthermore, it includes the appropriate responses that should be implemented following the evaluation of the composition.

Writing Skill

According to Byrne (1979), the concept of writing can be defined as the organization of sentences in a specific sequence and their connection in predetermined manners. (p. 1). Hacker,

Keener, and Kircher (2009) extend this notion by emphasizing the importance of the writing process. Writing described as the mental process of generating ideas and thoughts to share them either personally or with others. This process influenced by one's metacognitive monitoring and control, which involves setting specific goals and aims. Subsequently, these thoughts converted into a tangible form, such as written text, that can be communicated and understood by others (Hacker et al., 2009, p. 154). Flower and Hayes (1981) suggest that writing delineated as a mental process that entails the exercise of decision-making and choice-making. However, the shift in understanding writing as a dynamic process rather than a static output did not occur until the 1980s, as noted by Onozawa (2010). This shift involved a transition from prioritizing linguistic precision to investigating the developmental trajectory of authors as they engage in the act of writing (Xiao, 2016). Therefore, numerous theoretical frameworks have been developed to elucidate and comprehend the intricate nature of the writing process.(Abbas & Al-bakri,2018)

According to Norman (2013), writing is a skill with both productive and participatory qualities. Writing can be considered productive due to the belief that it serves the purpose of expressing our thoughts to others. From a broader perspective, writing is seen as an interactive process wherein we strive to achieve a specific objective and effectively communicate a message to the reader, who is typically the intended recipient of our written work (p. 127).

MentalProcess Model

According to Flower & Hayes (1981), the mental Process Model proposed to address the limitations of the Stage Model of Writing, which primarily focuses on the final written result while overlooking the mental processes used by writers during the writing job. Linda Flower and John Hayes were the proponents of this particular concept. Flower and Hayes (1981) and Onozawa (2010) on the other hand, state that"the mental process is used by students to produce their final written product and it is the main element in the writing process". (p. 64)

The Mental Process Model comprises three primary components encompassing many facets of writing: the task environment, the long-term memory of writers, and the writing process.

The task environment encompasses the rhetorical challenge at hand as well as the text that generated thus far. A rhetorical problem pertains to an instructional task that enables learners to discern and analyze the subject matter, intended audience, and their function within a given context. The successful resolution of the problem necessitates the utilization of advanced mental abilities and strategic approaches, hence highlighting the significance of metacognitive methods in this mental endeavor.

Moreover, the existing text influences the writer's decision to proceed with writing or pause to revise the content that has already been produced. The subsequent stage within the mental process encompasses the writer's repository of information, commonly referred to as long-term memory. This reservoir comprises the writer's accumulated knowledge on the subject matter, the intended audience, the strategic plans, and the underlying issue at hand.

Integrating these mental components facilitates the smooth advancement of the writing method. The final phase comprises the entirety of the writing method. This particular process involves three separate activities, including planning, translating, and reviewing. During the planning phase, authors engage in a deliberate process of making decisions and choices on the selection of knowledge that incorporated into their composition. The process has three discrete sub-processes, specifically idea development, organization, and goal setting.

According to Flower and Hayes (1981, p. 373), translation entails transforming abstract concepts into concrete forms of communication. Ultimately, the process of reviewing encompasses two distinct sub-processes, namely evaluation and revision.

Furthermore, Hacker et al. (2009) elucidate that the process of monitoring includes activities such as reading, rereading, reflecting, and reviewing. The authors claim that the aforementioned tactics might be classified as mental monitoring strategies, hence positioning writing as a form of "applied metacognition" (p. 161). The mental process model found to contribute to generating and enhancing students' intrinsic motivation. This is accomplished by granting learners the autonomy to autonomously regulate their writing without being restricted by the traditional demands of regulated writing (Onozawa, 2010).

Knowledge Telling and the Knowledge Transforming Models

The knowledge-telling process and the knowledge-transforming process were both influential components of the process model. The notion was introduced by Bereiter and Scardamalia in 1992 to tackle the difficulty of efficiently converting ideas into textual form (Victoria, 1995). Victoria (1995) asserts that a subset of writers lacks the proficiency to successfully articulate their mental ideas in a coherent textual structure (p. 21). More comprehensively, the two models provide a clearer understanding of the differences between skilled (expert) and inexperienced (novice) writers concerning their strategies for translating their knowledge and ideas into the process of writing (Mohammad,2022).

Knowledge Telling Model

This might be considered as a representation of inexperienced or novice writers. This technique emphasizes the subject matter, as the writer directs their attention towards it. The individual endeavors to identify clues that can stimulate the retrieval of their latent information from memory, thus commencing the process of direct written expression. According to Bereiter and Scardamalia (2013), when the writer begins the process of producing, the resulting textual units serve as additional cues or identifiers that facilitate the retrieval of previously stored knowledge. Consequently, the author makes a written composition without employing the problem-solving procedures proposed by Flower and Hayes's model. (Mohammed & Al-Bakri, 2022)

Knowledge Transforming Model

This model exemplifies the characteristics of proficient writers. The embedding of the former paradigm is also regarded as a process (Bereiter & Scardamalia, 2013). In this particular paradigm, the transcription of the text does not occur instantaneously. In contrast, it comes before issue-solving components like problem analysis, strategic planning, goal setting, and reader orientation (Victoria, 1995). During this iterative process, authors engage in ongoing revision and critical analysis, resulting in the establishment of novel sub-objectives for the written work (Bereiter & Scardamalia, 2013; Mohammed,2022). Writers who possess maturity in their craft are anticipated to employ metacognitive methods throughout the process of composing their work. It is noteworthy that according to Camps (as stated in Victoria, 1995), a significant proportion of students in academic institutions adhere to the knowledge-telling paradigm, which explains the challenges encountered by students in the realm of writing. According to the research conducted by Bereiter and Scardamalia (as stated in Victoria, 1995), it is suggested that to enhance students'

composition skills, they should move beyond the knowledge-telling paradigm and instead engage in knowledge-converting activities that include the application of higher-level mental processes. To clarify, it is imperative for students to possess knowledge and employ a diverse range of metacognitive writing skills when engaging in writing assignments. (Abdulrazzaq,2023).

Methodology

This section debates the method and offers an inclusive and full explanation of all the techniques followed to achieve the study's aims. It deals with the following:

1. Population and sampling.
2. Description of the Study Instruments.
3. Explaining the statistical procedures used for data analysis and results.

Population and Sampling

A population defines as a group of individuals or entities, including both human beings and non-human objects, institutions, units, or periods (Mills & Gay, 2019). The population of this study is Iraqi EFL students at the colleges of Education/ departments of English (except for the Kurdistan region) in the academic year 2022- 2023. The total number is (4120).

The sample consists of (360) Iraqi EFL university students enrolled in the third year at Babylon, Basrah, and Mosul Universities in the academic year 2022-2023. These participants were selected using a random sampling method. The following table shows the sample of the study:

Table 1. *Sample of the study*

No	Name of the University	No. of students
1	Babylon	97
2	Basrah	191
3	Mosul	72
Total		360

Description of the Study Instruments

To achieve the aims of the current study, two instruments have been used. They are; Metacognitive Awareness Writing Questionnaire (MAWQ) and Writing Performance Test (WPT):

Metacognitive Awareness Writing Questionnaire(MAWQ)

The questionnaire developed by Schraw and Dennison was implemented in 1994 to gather data on students' metacognitive awareness concerning their writing abilities. The ultimate configuration comprises 30 components, which are categorized into three distinct dimensions: declarative knowledge, procedural knowledge, and conditional knowledge. Each item is assessed using a five-point Likert scale, where a score of 1 means "strongly agree," 2 means "agree," 3 means "neutral," 4 means "disagree," and 5 means "strongly disagree." This scoring system applied to positive and negative items, with positive things receiving scores of 1 to 5 and negative items receiving scores of 5 to 1, respectively.

Writing Performance Test (WPT)

The researcher directed the test. To evaluate the writing performance of the students, they are mandated to compose a 250-word essay in the English language pertaining to a designated topic. The selection of the writing topic is based on the subjects that have been previously

addressed, as well as the criterion of authenticity. The writing component employs the analytic scoring framework as suggested by Brown (2007). The grading scheme has five criteria that are utilized to analyze the responses provided by pupils. The scoring for each criterion is on a scale of 6, resulting in a total score range of 6 to 30 for students in this section. During the examination, students are required to demonstrate performance in five key areas of written communication, namely content, organization, grammar, vocabulary, and mechanics. These components are meticulously assessed to evaluate the student's writing abilities. The examination is administered to measure the writing performance of students.

Validity and Reliability

The tools were subjected to examination by a panel consisting of fifteen university teachers with specialized knowledge in the domains of English Language Teaching (ELT) and linguistics. The jurors are responsible for analyzing the face validity of the study instruments and reviewing the appropriateness of the scoring techniques used to score the questionnaire. The evaluation of the reliability of the MAWQ evaluationperformed by the application of the test/retest method and Cronbach's alpha. The evaluation of the reliability of WPT is conducted by employing Cronbach Alpha, a statistical metric that indicates the adequacy of all reliability coefficients. A consensus has been achieved among specialists about the scoring method, the entirety of the instruments, and their individual items, except of a few language alterations that have been duly taken into account.

Results

The researchers used two scales, specifically the MAWQ and the WPT, on the chosen sample to achieve the study's objectives. A t-test for a single independent sample was used to control for statistically significant differences between the theoretical and arithmetic means after the standard deviations and means were computed.

The primary goal of the study was to determine the "Iraqi EFL University students' level of Metacognitive awareness," and to do this, the researcher used a metacognitive awareness scale to evaluate 360 students, both male, and female. Based on the data presented in the study, the typical sample score is 96,294 degrees, with a standard deviation of 20,263 degrees. There is statistical significance at the 0.05 level in the variance. The calculated t-value of 5.894 surpasses the threshold t-value of 1.96 with 359 degrees of freedom, proving this. This is shown in Figure One and Table Two:

Table 2. *Mean, Standard Deviation, and T-value of Metacognitive Awareness Scale*

Variable	Sample Size	M	S.D	Theoretical Mean	t- Value		Significance (0.05)
					Computed	Critical	
Metacognitive Awareness	360	96.294	20.263	90	5.894	1.96	significant

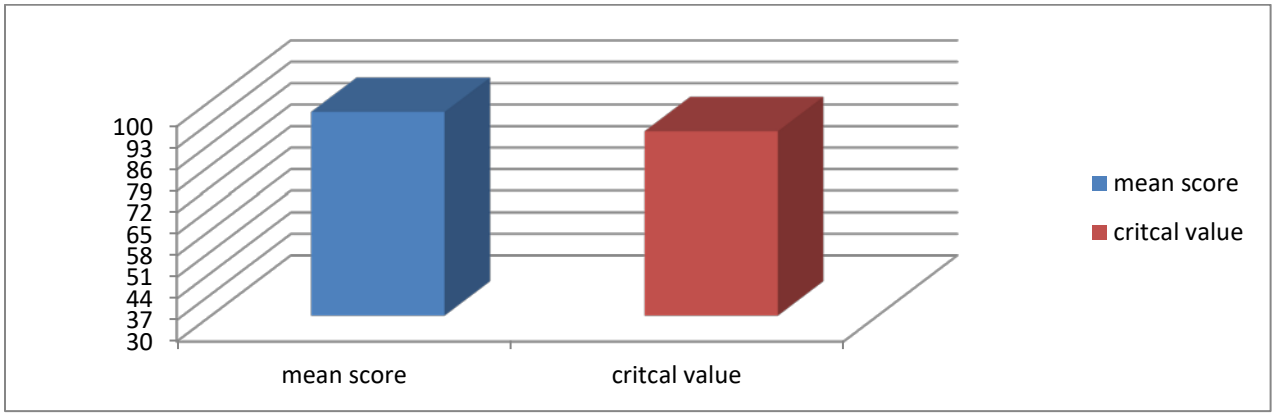


Figure1. Arithmetic and Hypothetical Mean of the Metacognitive Awareness Scale

The researcher next extracted the means and standard deviations for each domain of metacognitive awareness as part of an additional method. Using a one-sample t-test, the researcher determined whether there was a statistically significant difference between the mathematical and hypothetical means in each category. Both Figure Two and Table Three display the outcomes.

Table 3. *Mean, Standard Deviation, and T-value of the Domains of the Metacognitive Awareness Scale*

Variable	Sample Size	M	S.D	Theoretical Mean	t- Value		Significance (0.05)
					Computed	Critical	
Declarative Knowledge	360	36.642	6.962	33	9.924	1.96	Significant
Procedural Knowledge	360	38.064	8.574	36	4,567	1.96	Significant
Conditional Knowledge	360	21.589	5.450	21	2.050	1.96	Significant

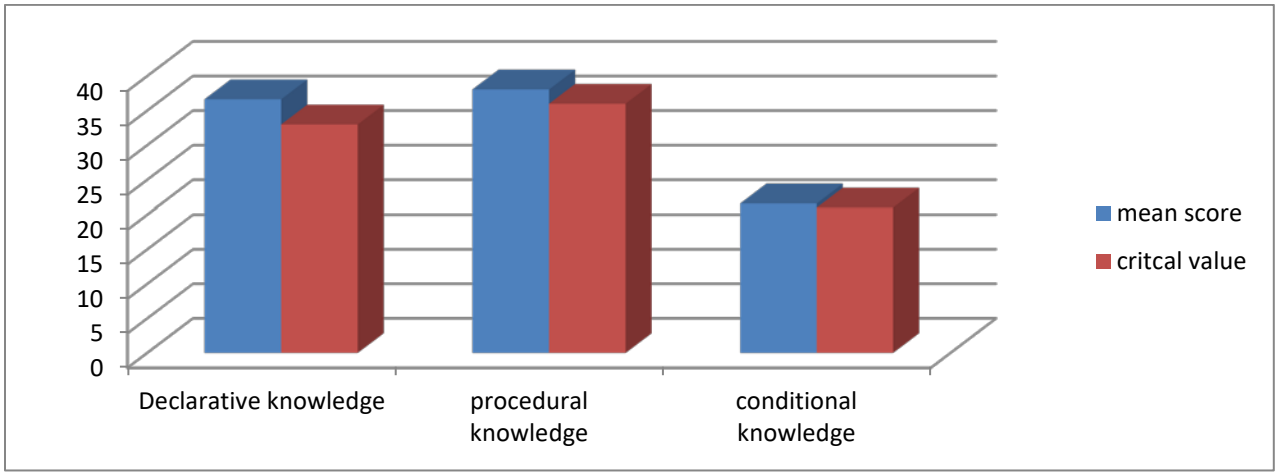


Figure 2. Computational and Hypothetical Domains of Metacognitive Awareness Scale

It is clear from Table Three and Figure Two:

1. The sample statistically had a mean of 36,642, a standard deviation of 6,962, and a hypothetical mean of 33. At the 0.05 level of significance and with 359 degrees of freedom, the computed t-value of 9.924 was more than the table value of 1.96. This demonstrates that the research population possesses a high degree of **declarative knowledge**.
2. With a standard deviation of 8,574, the sample's arithmetic mean was 38,064. Theoretically, a mean of 36 was also retained. The computed t-value of 4.567 was more than the crucial value of 1.96 at the 0.05 level of significance and with 359 degrees of freedom. This suggests that the chosen individuals have an exceptional level of comprehension of the **procedural knowledge**
3. Regarding conditional knowledge, the sample mean was 21,889 with a standard deviation of 5,450. In this hypothetical case, the mean was 21. The computed t-value was also 2,050 units higher than the tabular value. This computed t-value exceeded the tabular value, which was set at 1.96. These computations were carried out with 359 degrees of freedom and a significance threshold of 0.05. This result shows that the study's participants had a lot of **conditional knowledge.**

To achieve the second aim of "Iraqi EFL University students' level of Writing performance ", the researcher administered a writing performance test to a study population including 360 male and female students. The findings of the investigation revealed that the average score of the participants in the sample on the examination was 20,306 degrees, accompanied by a standard variation of 2,776 degrees. The results indicate that the variance is statistically significant at a significance level of 0.05. This is supported by the calculated t-value of 19.176, which exceeds the tabular t-value of 1.96, given a degree of freedom of 359. Consequently, the study sample demonstrates a high level of writing performance. The clarity of the information is realized through the utilization of Table four and Figure Three.

Table 4. *Mean, Standard Deviation, and T-value of the Writing Performance Test*

Variable	Sample Size	M	S.D	Theoretical Mean	t- Value		Significance (0.05)
					Computed	Critical	
Writing Performance test	360	20.306	2.766	17.5	19.176	1.96	Significant

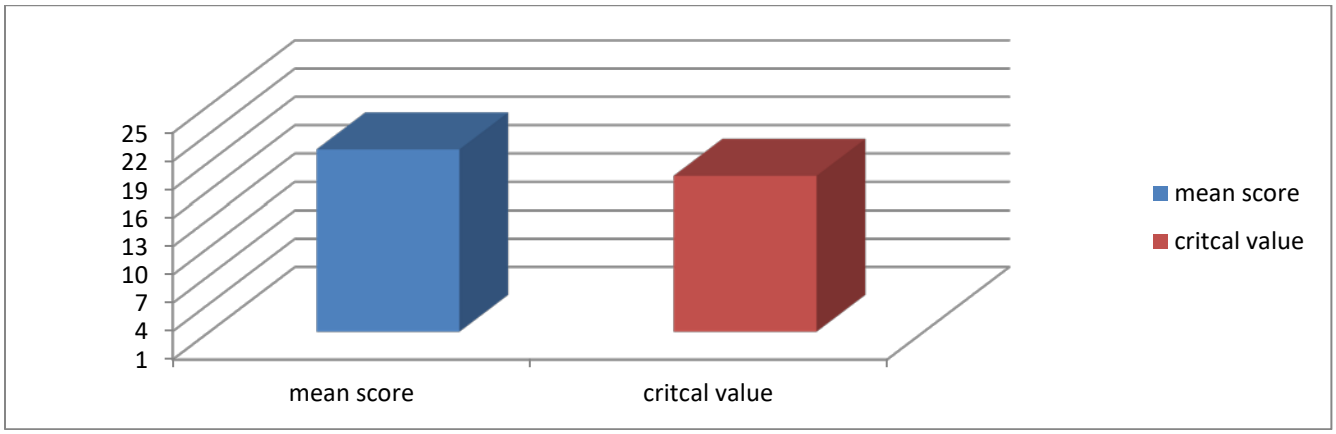


Figure3. Arithmetic and Hypothetical Mean of the Writing Performance Test

To accomplish the third aim of the current study which aims to find out "**The Correlation between Metacognitive Awareness and Writing Performance of Iraqi EFL university students**", the researcher used the Pearson correlation coefficient to evaluate the students' responses to the Metacognitive Awareness Scale and the Writing Performance Test. The results are shown in Table five and Figure four.

Table 5.*The Correlation between Metacognitive Awareness and Writing Performance*

Variable	Sample Size	M	S.D	Theoretical Mean	t- Value		Significance (0.05)
					Computed	Tabulated	
Writing Performance	360	20.306	2.776	17.5	19.176	1.96	significant

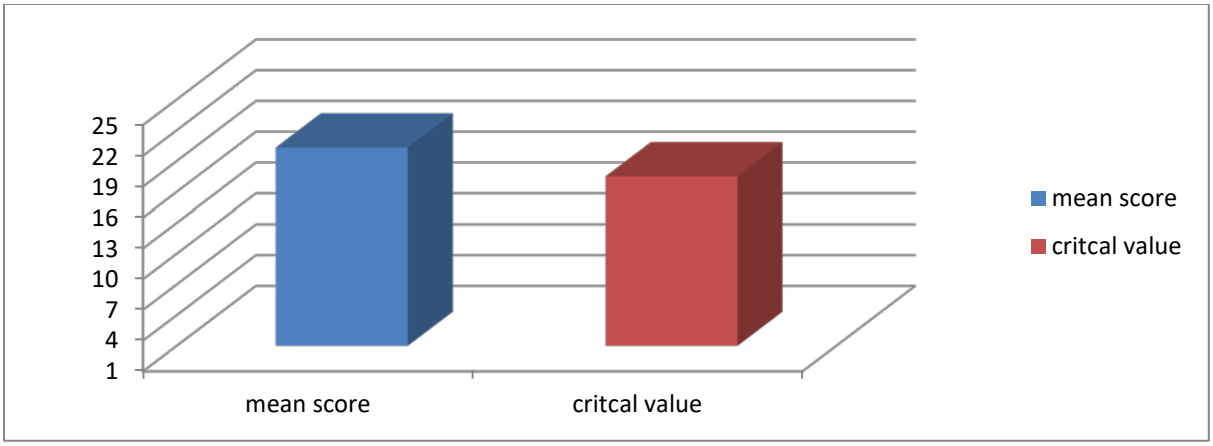


Figure 4. The Arithmetical and Hypothetical Average of the Writing Performance Test

The table presented provides evidence of a correlation coefficient value of 0.597 between metacognitive awareness and writing performance. To determine the significance of this correlation, the researcher conducted a t-test on the correlation coefficient. The resulting t-value was calculated to be 13.267, which exceeds the critical value of 1.96. At a significance level of 0.05 and with 358 degrees of freedom, the observed correlation between the two variables indicates a positive and statistically significant relationship. Specifically, the findings suggest that as metacognitive awareness increases among the participants in the study, their writing skill also improves.

Discussion

The results validate the correlation between metacognitive awareness and writing performance. This empirical study confirms the fact that metacognitive skill is considered as a " valuable " skill for language learners (Millis, 2016) hence it can positively affect the learning outcome. Being an active learner requires consciousness of the mental processes involved in learning. The findings deduce that Iraqi EFL University students have a good level of metacognitive awareness. They indicate that "the students know well how to think, plan, realize, synthesize, induce and access information strategically". On the other hand, they found that the

students have a good level of writing performance which seems statistically significant. Furthermore, it found that the metacognitive awareness of Iraqi EFL students is statistically correlated with their writing performance. In addition, the metacognitive awareness had a positive effect on the writing performance.

Conclusion

This study found that Iraqi university students taking English as a second language have a respectable amount of self-awareness and a passable level of proficiency in writing. In addition, the study's results show that university-level EFL students from Iraq who have a high level of metacognitive awareness also have good writing skills. As a result, there is a strong relationship between the level of metacognitive awareness and the writing performance of Iraqi university students taking EFL classes. In addition, the results from the study instruments show that students' metacognitive awareness is positively correlated with their writing performance, which can explain a lot of the observed diversity in writing performance.

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