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Araştırma Makalesi ◆ Research Article

THE EFFECTS OF METACOGNITION ON ACADEMIC ACHIEVEMENT IN ENGLISH AS A FOREIGN LANGUAGE

Üstbilişin Yabancı Dil Olarak İngilizce Akademik Başarısı Üzerindeki Etkileri

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MAKALE BİLGİSİ

Anahtar Kelimeler:

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ÖZ

Bu çalışma, ortaokul öğrencilerinde üstbiliş farkındalığı ile İngilizce akademik başarısı arasındaki ilişkiyi incelemektedir. Araştırma, Konya, Türkiye'de 6., 7. ve 8. sınıflardan 164 öğrenci ile gerçekleştirilmiştir. Veriler, Üstbilişsel Farkındalık Envanteri (MAI) ve öğrencilerin İngilizce ders başarı puanları kullanılarak toplanmıştır. Pearson korelasyon analizi, üstbiliş farkındalık düzeyi ile İngilizce akademik başarısı arasında orta düzeyde pozitif bir ilişki olduğunu göstermiştir ($r = 0.439$, $p < 0.01$). Ayrıca, regresyon analizi, üstbiliş farkındalığının akademik başarıyı anlamlı bir şekilde yordadığını ($\beta = 0.439$, $p < 0.001$) ve toplam varyansın %18.8'ini açıkladığını ($R^2 = 0.188$) ortaya koymuştur. Ancak, cinsiyet ve sınıf düzeyi değişkenlerine göre üstbiliş farkındalık puanlarında anlamlı bir farklılık bulunmamıştır. Elde edilen bulgular, üstbiliş becerilerinin dil öğrenme başarısında kritik bir rol oynadığını ve öğrenci performansını artırmak için öğretim stratejilerine entegre edilmesi gerektiğini göstermektedir.

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ABSTRACT

This study examines the relationship between metacognitive awareness and academic achievement in English as a foreign language among secondary school students. The research was conducted in Konya, Turkey, with 164 students from 6th, 7th, and 8th grades. The Metacognitive Awareness Inventory (MAI) and students' English achievement scores were used to assess the relationship between metacognition and academic success. Pearson correlation analysis revealed a moderate positive relationship between metacognition and English achievement ($r = 0.439$, $p < 0.01$). Additionally, regression analysis indicated that metacognition significantly predicted academic achievement ($\beta = 0.439$, $p < 0.001$), explaining 18.8% of the variance ($R^2 = 0.188$). However, no significant differences were found in metacognitive awareness scores based on gender or grade level. The findings suggest that metacognitive skills play a crucial role in language learning success and should be integrated into instructional strategies to enhance student performance.

1 Introduction

Metacognition, a concept introduced by Flavell (1979, p. 911), refers to the awareness, monitoring, and regulation of one's cognitive processes. It involves not only thinking about thinking but also strategically managing learning processes to improve academic performance (Durdukoca & Arıbaş, 2019, p. 1542). Metacognition is often considered both a cognitive tool and the underlying mechanism that allows learners to reflect on and refine their learning strategies (Veenman et al., 2006, p. 6). As emphasized by Nisbet & Shucksmith (1986, p. 131), metacognition plays a crucial role in choosing effective learning strategies, regulating study habits, and achieving academic success.

Several studies have established that students with higher metacognitive awareness tend to perform better academically due to their ability to self-regulate their learning, monitor their comprehension, and adjust their study techniques accordingly (Eshel, 2003, p. 252; Sungur, 2009, p. 884; Yılmaz-Tuzun & Topcu, 2008, p. 66). Effective learning, therefore, requires students to understand the strategies available to them, know when and how to use these strategies, and recognize when a particular approach is ineffective (Winne & Hadwin, 1998, Chapter 12). Furthermore, Bayer (2024, p. 9) highlighted that educators should actively model and demonstrate metacognitive skills, making them an integral part of their teaching practices to support students in developing independent learning abilities.

In the context of foreign language learning, metacognition plays an essential role in enhancing comprehension, vocabulary retention, reading strategies, and listening skills (Oxford, 1990, p. 3). Research suggests that metacognitive strategies allow students to actively control their language learning process by planning study sessions, evaluating progress, and adjusting their approaches based on effectiveness (Everson & Tobias, 1998, p. 65). As Jenkins (2012, p. 486) pointed out, the increasing demand for English as a global language has made language learning an essential skill in education and professional life. Similarly, Munat (2005, p. 143) emphasized that English has become the dominant language in international communication, science, technology, and business, highlighting the need for effective language learning strategies.

However, despite the clear connection between metacognition and academic achievement, there is still limited research on its role in English as a Foreign Language (EFL) learning, particularly at the secondary school level (Öztürk, 2017, p. 161). Additionally, although studies have explored general metacognitive abilities in education, fewer have examined how metacognition predicts English academic success and whether it varies based on demographic factors such as gender and grade level (Van der Stel et al., 2010, p. 227). This study aims to address these gaps by investigating the relationship between metacognitive awareness and English achievement among middle school students.

Research Questions

- This study seeks to answer the following research questions:
- What is the relationship between metacognitive awareness and academic achievement in English?
- Does metacognitive awareness significantly predict students' English language achievement?
- Do metacognitive awareness levels differ based on students' gender or grade level?

2. Literature Review

Metacognition, commonly defined as "thinking about thinking," has been widely examined in educational psychology and cognitive science due to its significant role in academic achievement, self-regulated learning, and language acquisition (Flavell, 1979). Over the past few decades, researchers have sought to understand how metacognition contributes to learning by identifying its components, mechanisms, and effects on different subject areas (Winne & Hadwin, 1998; Schraw & Dennison, 1994). Given the growing emphasis on learner autonomy and cognitive awareness in modern education, metacognition has become a critical factor in foreign language learning (Rahimi & Katal, 2012).

This section reviews the theoretical foundation of metacognition, its relationship with academic achievement, and its specific role in English as a Foreign Language (EFL) learning. Additionally, previous studies on metacognition and English language achievement are discussed to highlight existing research gaps.

2.1 Definition and Components of Metacognition

The term metacognition was first introduced by Flavell (1979), who described it as "the knowledge and regulation of one's own cognitive processes" (p. 906). Since then, several frameworks have been developed to categorize metacognition, with the most widely accepted model dividing it into two main components:

Metacognitive Knowledge: Awareness of one's own learning strategies, cognitive strengths and weaknesses, and conditions affecting learning outcomes (Schraw & Dennison, 1994). This includes:

- Declarative knowledge (knowing what learning strategies exist),
- Procedural knowledge (knowing how to apply them),
- Conditional knowledge (understanding when and why to use them) (McDevitt & Ormrod, 2008).
- Metacognitive Regulation: The ability to monitor, control, and adapt learning behaviors and strategies in real time. This involves:
- Planning (setting learning goals and selecting strategies),
- Monitoring (tracking progress and identifying comprehension difficulties),
- Evaluation (assessing the effectiveness of learning methods and making adjustments) (Veenman et al., 2006).

These components enable learners to take control of their cognitive processes, optimize their study strategies, and improve overall academic performance (Young & Fry, 2008).

2.2 The Relationship Between Metacognition and Academic Achievement

A substantial body of research has established a strong correlation between metacognitive skills and academic success (Zimmerman, 2002; Callan, 2016). Students who possess higher metacognitive awareness tend to exhibit:

- More effective self-regulated learning behaviors (Winne & Hadwin, 1998),
- Higher levels of problem-solving and critical thinking (Eshel, 2003),
- Improved academic performance across different subjects, including mathematics, science, and language learning (Chiu et al., 2007).

Metacognition is particularly essential in reading comprehension and problem-solving tasks, as it allows learners to identify difficulties, self-correct errors, and adopt alternative strategies (Mokhtari & Reichard, 2002). Research by Young & Fry (2008) confirmed that students who actively regulate their learning process achieve significantly higher exam scores compared to those with low metacognitive awareness.

Several studies have suggested that metacognition is one of the strongest predictors of academic success (Vander Stel et al., 2010). For example, a study by Yip (2018) found that students who received explicit instruction on metacognitive strategies demonstrated higher achievement levels in standardized tests. Similarly, Bayer (2024) highlighted that teaching metacognitive skills enhances both critical thinking and independent learning capabilities in students.

Given its predictive power, educators have emphasized the need to incorporate metacognitive training into curricula to support students in developing lifelong learning strategies (Everson & Tobias, 1998).

2.3 Metacognition in Foreign Language Learning

In English as a Foreign Language (EFL) learning, metacognition plays a crucial role in enhancing comprehension, vocabulary acquisition, and overall language proficiency (Oxford, 1990). Unlike native language learning, where cognitive processes are often intuitive, learning a second language requires active regulation and conscious strategy use (Rahimi & Katal, 2012).

2.3.1 The Role of Metacognition in EFL Learning

Metacognitive strategies enable learners to:

- Plan their language learning activities (e.g., setting specific study goals),
- Monitor their comprehension and language production (e.g., identifying grammatical errors),
- Evaluate the effectiveness of their learning approaches (e.g., adjusting study techniques based on performance).

According to Victori & Lockhart (1995), successful language learners demonstrate a higher level of metacognitive awareness by selecting and applying learning strategies that suit their needs. Their findings suggest that students with strong metacognitive skills can compensate for weaker linguistic abilities by strategically managing their learning process.

2.3.2 Empirical Studies on Metacognition and EFL Success

Several empirical studies have confirmed the importance of metacognition in foreign language learning:

- Rahimi & Katal (2012) found that metacognitive strategy use was positively correlated with students' English language proficiency, particularly in reading and listening comprehension.
- Oxford & Crookall (1989) reported that students who frequently engaged in self-reflection and self-monitoring techniques performed significantly better in vocabulary retention tests.
- Jenkins (2012) argued that metacognition is essential for adapting to the increasing demands of English as a global language, as it allows learners to develop adaptive and flexible learning strategies.
- Given these findings, it is evident that metacognitive awareness contributes directly to English language learning success by enabling students to become more autonomous and self-regulated learners.

2.4 Research Gap and Rationale for the Study

Although previous research has demonstrated a clear connection between metacognition and academic success, several gaps remain in the literature:

Limited studies on metacognition in middle school EFL learners: Most studies have focused on university students, leaving a gap in research on secondary school students' metacognitive awareness (Akyıldız, 2015).

Lack of studies examining metacognition as a predictor of English achievement: While metacognition has been widely studied in math and science education, fewer studies have explored its predictive role in EFL learning (Öz, 2016).

Insufficient research on demographic influences: There is a need for studies that investigate whether metacognitive awareness differs by gender or grade level (Ayhan & Türkyılmaz, 2015).

3. Methodology

This section describes the research design, participants, data collection instruments, and data analysis methods used to examine the relationship between metacognitive awareness and English academic achievement among middle school students.

3.1 Research Design

This study employed a quantitative research design using a correlational approach to investigate whether metacognitive awareness significantly predicts English language achievement. A survey-based methodology was used to collect data from secondary school students, and statistical analyses, including correlation and regression analyses, were conducted to determine the strength and direction of the relationship between the variables.

The rationale for using a correlational research design stems from its effectiveness in identifying associations between cognitive and academic variables (Creswell, 2014). Additionally, the study adopted a cross-sectional approach, meaning that data were collected at a single point in time rather than longitudinally.

3.2 Participants

The study sample consisted of 164 secondary school students from grades 6, 7, and 8 in a middle school located in Çumra, Konya, Turkey. The distribution of students by grade level was as follows:

- 6th grade: 66 students (40.2%)
- 7th grade: 47 students (28.7%)
- 8th grade: 51 students (31.1%)

The gender distribution was 95 male students (57.9%) and 69 female students (42.1%). Participants were selected using a convenience sampling method, which was deemed appropriate due to accessibility and feasibility constraints in school-based research (Fraenkel et al., 2012).

The study followed ethical guidelines, ensuring that all students participated voluntarily and that parental consent was obtained. Confidentiality was maintained, and students were informed that their responses would be used solely for research purposes.

3.3 Data Collection Instruments

Two primary instruments were used for data collection:

3.3.1 Metacognitive Awareness Inventory for Children (MAI-C)

The Metacognitive Awareness Inventory for Children (MAI-C), developed by Sperling et al. (2002), was used to assess students' metacognitive awareness. The inventory consists of 18 items measuring two subdimensions:

- Metacognitive Knowledge (awareness of learning strategies and cognitive processes)
- Metacognitive Regulation (ability to monitor, evaluate, and control one's learning)

The inventory has been previously validated in the Turkish educational context (Karakelle & Saraç, 2007), demonstrating high internal reliability (Cronbach's $\alpha = 0.87$). Responses were recorded on a 5-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Higher scores indicated greater metacognitive awareness.

3.3.2 English Academic Achievement Scores

Students' English language achievement was assessed using their final semester English exam scores. These scores were obtained from the school's academic records to ensure objective measurement of students' language proficiency. The English exams assessed:

- Reading comprehension
- Grammar and vocabulary usage
- Listening skills
- Writing proficiency

The use of actual academic performance data (rather than self-reported achievement) enhanced the reliability and validity of the study's findings (Öztürk, 2017).

3.4 Data Analysis

Data were analyzed using IBM SPSS Statistics 26, following descriptive and inferential statistical methods. The analysis included:

- Mean, standard deviation, minimum and maximum values were calculated for metacognitive awareness scores and English academic achievement scores.
- The relationship between metacognitive awareness and English academic achievement was examined using Pearson correlation coefficients (r) to determine the strength and direction of associations between variables.

- A linear regression analysis was conducted to assess whether metacognitive awareness significantly predicts English achievement. The R^2 value was reported to determine how much variance in English scores was explained by metacognitive awareness.
- Independent samples t-test was performed to compare male and female students in terms of metacognitive awareness.
- One-way ANOVA was used to examine differences across grade levels (6th, 7th, and 8th grades).
- All statistical tests were conducted at a 95% confidence level ($p < 0.05$), and effect sizes were reported where applicable (Cohen, 1988).

3.5 Ethical Considerations

The study adhered to ethical research guidelines outlined by the Turkish Ministry of National Education (MEB). Before data collection, formal approval was obtained from the school administration. Participants were informed about the voluntary nature of their participation, and written consent was obtained from parents and guardians. All student data were kept confidential, and anonymity was ensured throughout the research process.

This section presents the findings of the study based on descriptive statistics, correlation analysis, regression analysis, and group comparisons. The results address the relationship between metacognitive awareness and English academic achievement among middle school students.

4. Results

Table 1 displays the descriptive statistics for metacognitive awareness scores and English achievement scores. The mean metacognitive awareness score was 55.76 (SD = 13.71), with scores ranging from 26 to 90. The mean English achievement score was 69.03 (SD = 14.71), ranging from 40 to 100. These values indicate a moderate level of metacognitive awareness and relatively high English performance among participants.

Table 1: Descriptive Statistics has been displayed for review

Variable	N	Mean	SD	Min.	Max.
Metacognitive Awareness Total	164	55.760	13.713	26.000	90.000
English Course Grade	164	69.030	14.711	40.000	100.000

A Pearson correlation analysis was conducted to examine the relationship between metacognitive awareness and English achievement. The results, presented in Table 2, indicate a moderate positive correlation ($r = 0.439$, $p < 0.01$). This suggests that students with higher metacognitive awareness tend to perform better in English.

Table 2: Correlation Between Metacognitive Awareness and English Course Grade

Variable	r	p
English Course Grade	0.439**	0.000

A linear regression analysis was conducted to determine whether metacognitive awareness significantly predicts English academic achievement. The regression model, summarized in Table 3, revealed that metacognitive awareness was a significant predictor of English achievement ($\beta = 0.439$, $p < 0.001$). The unstandardized coefficient (B) = 0.471, indicating that for every one-unit increase in metacognitive awareness, English scores increase by 0.471 points. The model explained 18.8% of the variance ($R^2 = 0.188$), indicating a moderate effect size. The Durbin-Watson value (1.916) suggested that there were no major autocorrelation issues in the regression model.

Table 3: The Effect of Metacognitive Awareness Level on English Course Grade

Independent Variable	Unstandardized Coefficients		Standardized Coefficients	t	p	95% Confidence Interval	
	B	SE	β			Lower	Upper
Constant	42,752	4,347		9,834	0,000	34,167	51,336
Metacognitive Awareness	0,471	0,076	0,439	6,224	**0,000**	0,322	0,621
* Dependent Variable = English Course Grade; R = 0.439, R^2 = 0.188, F = 38.737, p = 0.000; Durbin-Watson Value = 1.916							

Table 4 examines the differentiation of students' metacognitive awareness scores and English course grades based on demographic characteristics. In terms of grade level, the mean metacognitive awareness score for 6th-grade students was 53.59 ± 15.06, for 7th-grade students 56.36 ± 11.67, and for 8th-grade students 58.02 ± 13.45. However, this difference was not found to be statistically significant (F = 1.574, p = 0.210). Similarly, there was no significant difference between the grade levels in terms of English course grades (F = 0.118, p = 0.889).

When comparing gender, the mean metacognitive awareness score for male students was 55.84 ± 13.89, while for female students, it was 55.65 ± 13.55. The difference between groups was not statistically significant (t = 0.087, p = 0.931). In terms of English course grades, there was also no significant difference between male (68.58 ± 14.78) and female (69.65 ± 14.70) students (t = -0.460, p = 0.646).

Table 4: The Differentiation of Metacognitive Awareness Scores by Descriptive Characteristics

Demographic Characteristics	n	Metacognitive Awareness Total (Mean ± SD)	English Course Grade (Mean ± SD)
Grade Level			
6th Grade	66	53.590 ± 15.062	69.060 ± 14.714
7th Grade	47	56.360 ± 11.678	68.260 ± 15.222
8th Grade	51	58.020 ± 13.450	69.710 ± 14.488
F-value		1.574	0.118
p-value		0.210	0.889
Gender			
Male	95	55.840 ± 13.895	68.580 ± 14.781
Female	69	55.650 ± 13.559	69.650 ± 14.700
t-value		0.087	-0.460
p-value		0.931	0.646

5. Discussion and Conclusion

This study examined the relationship between metacognitive awareness and English academic achievement among middle school students. The findings revealed a moderate positive correlation between metacognitive awareness and English achievement ($r = 0.439$, $p < 0.01$), indicating that students with higher metacognitive skills tend to perform better in English. Regression analysis further confirmed that metacognitive awareness is a significant predictor of English achievement ($\beta = 0.439$, $p < 0.001$), explaining 18.8% of the variance in students' English scores.

However, no significant differences were found in metacognitive awareness or English achievement based on gender or grade level. This suggests that students' ability to regulate their learning and their English performance do not significantly change based on these demographic factors.

These results align with previous studies highlighting the importance of self-regulated learning strategies in academic success (Flavell, 1979; Schraw & Dennison, 1994). The findings suggest that students who actively monitor, evaluate, and regulate their learning tend to achieve better academic outcomes in language learning (Young & Fry, 2008; Winne & Hadwin, 1998).

Additionally, the lack of significant differences in metacognitive awareness across gender and grade levels contrasts with some studies suggesting that female students tend to have higher metacognitive awareness (Everson & Tobias, 1998; Zimmerman, 2002). However, it supports research indicating that metacognitive skills develop based on individual experiences rather than inherent gender differences (Veenman et al., 2006). Similarly, the fact that metacognitive awareness did not vary significantly among 6th, 7th, and 8th graders supports the idea that cognitive regulation develops gradually rather than in distinct stages (Van der Stel et al., 2010).

Educational Implications and Future Research Directions

Given that metacognitive awareness significantly predicts English achievement, educators should integrate metacognitive strategy training into language teaching. Classroom interventions should emphasize self-questioning, goal setting, and reflection on learning strategies to enhance students' ability to regulate their learning (Oxford, 1990). Additionally, personalized learning approaches should be implemented to support students based on their unique metacognitive strengths rather than a one-size-fits-all model.

Despite its contributions, this study has some limitations. The sample was limited to 164 middle school students from a single region, which may affect the generalizability of the findings. Furthermore, the cross-sectional design provides a snapshot of students' metacognitive awareness at one point in time; a longitudinal approach could offer deeper insights into how metacognitive skills evolve. Additionally, the study relied on self-reported measures, which may introduce response bias. Future research should incorporate observational methods or think-aloud protocols to obtain a more comprehensive understanding of metacognitive processes.

Conclusion

This study provides empirical evidence supporting the role of metacognitive awareness in English academic achievement among middle school students. The findings emphasize the need for explicit instruction in metacognitive strategies, self-regulation, and individualized learning approaches to maximize student success. Future research should further explore how metacognitive skills develop over time and their role in different educational contexts. By fostering metacognitive abilities, educators can equip students with the tools to become independent, self-regulated learners, ultimately improving their academic performance and language proficiency in an increasingly complex learning environment.

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