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The Relationship Between Metacognitive Awareness and Academic Procrastination Behavior: The Moderator Role of Gender and Grade Level

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Abstract

This research aimed to reveal the relationship between university students' metacognitive awareness (MA) and academic procrastination levels. Additionally, the moderator effects of gender and grade level in this relationship were examined. The quantitative research method was adopted, and descriptive and associational research designs were used. The sample consisted of 375 undergraduate students studying at Gaziosmanpaşa University in Tokat, Turkey. The data were collected using a demographic information survey and the, Metacognitive Awareness Scale, and Academic Procrastination Scale. The results showed that students have a low level of academic procrastination behavior and moderate to high level of cognitive awareness. There is a moderate, negative, and statistically significant relationship between academic procrastination behavior and MA; as MA increases, academic procrastination behavior decreases. Thus, MA is a significant variable in predicting academic procrastination; 17.8% of the variance in academic procrastination behavior is explained by MA. The moderator roles of gender and grade level in this relationship are not statistically significant.

Keywords: Academic procrastination, Metacognitive awareness, Moderator variable, Regression analysis, University students

Introduction

In its simplest form, procrastination refers to a person delaying something he/she should do. The reason for the delay is usually the person's reluctance to do the work in question (Oxford Dictionary, 2020). Although procrastination is often perceived as a negative behavior, this perception is not always true. There are situations in which procrastination is favorable and appropriate. For example, one can set the tasks to do in order of importance and postpone some tasks according to this order. Procrastination becomes a problem when people unreasonably delay the tasks that they deem important and aim to complete, to the extent that they feel worried and sad; turn the procrastination behavior into a habit; and get substandard results. In this case, one can consider procrastination as being pathological (Ferrari, 1991; Ferrari et al., 1995; Milgram, 1991; Rothblum et al., 1986; Steel, 2007; Van Eerde, 2003). Chronic procrastination is a common and relevant problem that can causes stress and leads to psychological function and adaptation disorders (Ferrari et al., 1995).

Procrastination behavior is mainly analyzed as a personality trait or in association with certain situations (Senécal et al., 1997; Steel, 2007; Taylor, 1979). As a personality trait, procrastination can be defined making postponement a habit in all areas, regardless of time or situation. Contrastingly, situational procrastination is transforming the act of procrastination into a habit for a specific circumstance (Senécal, Lavoi, 1997). One of the most common types of situational procrastination is academic procrastination (Can & Zeren, 2019).

Academic procrastination can be defined as usually or always delaying an academic task or assignment, causing a student to usually or always feel worried at a problematic level (Rothblum et al., 1986). This is a highly common behavior among university students (Çeri et al., 2015; Odacı & Kaya, 2019; Yurtseven & Doğan, 2019) because they have to deal with homework, exams, and different assessment activities in a limited time. Additionally, the stress caused by the students' desire to fulfill their responsibilities toward their families can cause them to have difficulties organizing their academic life, causing them to exhibit academic procrastination behavior (Balkıs, 2013). In turn, academic procrastination can lead to time and financial losses, such as failing a

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course, prolonging the education period, having a low academic average, and missing various educational opportunities (Aydoğan & Özbay, 2012).

Academic procrastination behavior has a complex structure, with various behavioral, cognitive, and emotional dimensions (Ferrari, 1991). The factors that affect academic procrastination behavior can be categorized as demographic and cognitive factors (e.g., age, gender, standardized exam results), personal factors (e.g., anxiety, pessimism, neurosis, job commitment), factors related to self-perception (e.g., self-esteem, self-efficacy), motivational factors (e.g., fear of failure, perfectionism, self-inhibition), affective factors (e.g., situational anxiety that includes test anxiety, depression, and low mood), and performance-related factors (e.g., time spent on completing the task, deadlines, course grades, overall academic average) (Van Erdee, 2003). Many studies investigate the relationship between academic procrastination behavior and different variables. Some of these studies are: the relationship between time spent on technology or technology/internet addiction and academic procrastination (Engin & Genç, 2020; Noise, 2016; Yang et al., 2019); the relationship between academic procrastination and variables such as perfectionism, motivation, self-regulation, hope, trait anxiety, irrational beliefs, self-efficacy, emotional intelligence, problem-solving, responsibility, and general competence (Çelikkaleli & Akbay, 2013; Çetin & Ceyhan, 2018; Ekşi & Dilmaç, 2010; Grunschel et al., 2016; Naktiyok & Kızıl, 2018; Odacı & Kaya, 2019; Sarıkabak et al., 2018; Wu & Fan, 2017; Yurtseven & Doğan, 2019; Yücel & Şen, 2019); the relationship between time management and academic procrastination (Aydın & Koçak, 2016); the relationship between academic procrastination and variables such as age, gender, grade level, department, place of residence, education level, and academic achievement (Çelik & Odacı, 2015; Doğan et al., 2014; Memnun & Akkaya, 2009; Ocak & Boyraz, 2016; Özer & Altun, 2011; Şirin & Duman, 2018; Yaycı & Düşmez, 2016); and the relationship between values and academic procrastination (Ayyıldız, 2016). Results reveal that there are relationships at varying levels between the aforementioned variables and academic procrastination. The determination of a relationship between academic procrastination behavior and variables such as self-regulation, self-efficacy, problem-solving, and general competence in the literature leads to the hypothesis that there could be a relationship between MA and academic procrastination (Bedel, 2017; Vural & Gündüz, 2019).

Metacognition, which is another variable of this research, is frequently referred to as "thinking about thinking." It is a regulatory system that helps individuals understand and control their own cognitive performance; moreover, it enables individuals to be responsible for their own learning (Jaleel, 2016). Metacognitive awareness (MA) is a competence that has significant effects on cognitive goals or tasks, metacognitive knowledge, cognitive actions, and cognitive strategies (Flavell, 1979). Fırat-Durdukoca (2013) stated that MA has three dimensions: personal awareness (PA), organizational awareness (OA), and judgmental awareness (JA). Personal awareness refers to what individuals do to perceive and solve a subject or problem that is related to them. Organizational awareness refers to individuals planning a process and acting in accordance with this plan when performing a task or producing a solution to a problem. Judgmental awareness refers to individuals' evaluation of the learning or solution process and alternatives for learning and problem-solving after its completion.

There are studies in the literature that investigate the relationship between MA and various variables. Some of the prominent variables can be listed as follows: self-efficacy, problem-solving, anxiety, epistemological beliefs, reading skills, questioning skills (Bars, 2016; Bedir, 2017; Koç & Aralan, 2017; Oğuz & Kutlu-Kalender, 2018; Sezgin, Bakır, & Gündoğdu, 2019), learning approaches (Şen, 2019), academic achievement (Ayaz, 2019; Kaya, 2019), gender, age, education level, seniority, and grade level (Baltacı, 2019; Cabı et al., 2016; Oğuz & Kutlu-Kalender, 2018).

However, studies in the literature investigating the relationship between MA and academic procrastination are limited. While some of the studies found a moderate and negative relationship between MA and academic procrastination (Price, 2017; Wong, 2012), other studies revealed a low-level and negative relationship (Çırıkçı, 2016; Vural & Gündüz, 2019). These differing results indicate a need for more research on the subject. In this study, the moderator roles of gender and grade level variables in the relationship between MA and academic procrastination behavior are examined. The reason for this is that some literature reported relationships between MA and academic procrastination and gender and grade level. According to Oğuz and Kutlu-Kalender (2018), gender and grade level differentiate MA. Memnun and Akkaya (2009) and Hashempour et al. (2015) found that the grade level differentiates MA. Meanwhile, Çelik & Odacı, (2015) and Yaycı & Dusmez (2016) found that academic procrastination behavior differed according to gender and grade level, while Şirin & Duman (2018) determined that academic procrastination differed according to gender. All these results lead to the hypothesis that gender and grade level may have an effect on the relationship between MA and academic procrastination. There has been no study investigating the moderator role of gender and grade level variables in this relationship.

Hence, investigating the relationship between academic procrastination and MA—in general and in the context of its sub-dimensions—and the moderator role of gender and grade level will be an important contribution to the literature.

Research Purpose

This study aims to reveal the relationship between university students' academic procrastination behavior and MA, including its sub-dimensions—personal, organizational, and judgmental awareness. Additionally, the moderator effect of gender and grade level variables on the relationship between students' metacognitive and academic procrastination behaviors is examined. The research questions are as follows:

1. What are the levels of university students' MA and its sub-dimensions—personal, organizational, and judgmental awareness—and academic procrastination behavior?
2. Do the personal, organizational, and judgmental awareness of university students significantly predict their academic procrastination behavior?
3. Does gender play a moderator role in the relationship between MA and academic procrastination behavior of university students?
4. Does grade level play a moderator role in the relationship between MA and academic procrastination behavior of university students?

Method

The study adopted a quantitative research method and used non-experimental descriptive and relational research designs (see Gliner et al., 2009). The sample was determined through the descriptive research method, and the levels of students' MA and academic procrastination behavior were presented using descriptive statistics. The relationship between MA and academic procrastination behavior and the moderator role of gender and grade level variables in this relationship was determined through correlational research methods.

Sample

The study sample consisted of 375 undergraduate students studying at the Gaziosmanpaşa University in Tokat, Turkey; the students were selected through the convenience sampling method. From the students included in the sample, 58% (f = 217) were female, and 42% (f = 158) were male; 25% (f = 94) were1st grade level; 14% (f = 53) were 2nd grade; 28% (f = 104) were 3rd grade; and 33% (f = 124) were 4th grade. Further, 40.5% of the students (f = 152) are undertaking their studies in the science and literature department; 34% (f = 127) in the Islamic studies department; and the remaining 25.5% (f = 96) in the education, social and human sciences, economics and administrative sciences departments, faculties of health and applied sciences, and gastronomy undergraduate program of a tourism and hotel management college.

Data Collection Tools

The research used a demographic information questionnaire and the Metacognitive Awareness Scale (MCAS), and Academic Procrastination Behavior Scale as data collection tools. The researcher prepared the demographic information questionnaire, consisting of three questions.

The MCAS was developed by Fırat-Durdukoca (2013). It consists of three dimensions and 18 items. The dimensions are PA, OA, and JA. This scale has a 5-point Likert-type rating. Fırat-Durdukoca (2013), reported the Cronbach's alpha reliability of the scale as .75 in her study. The scale's Cronbach's alpha reliability in this study was .90. Permission to use the scale was obtained via e-mail from the researcher who developed it.

Aitken (1982) developed the Academic Procrastination Behavior Scale, which was adapted into Turkish by Balkıs (2006). It consists of one dimension and 16 items and uses a 5-point Likert-type rating. Validity and reliability studies on the scale have found it valid, reliable, and usable. The Cronbach's alpha reliability coefficient of the scale was .89 in Balkıs's (2006) study. The scale's Cronbach's alpha reliability in this study was .86. Permission use the scale was obtained via e-mail from the researcher who adapted it into Turkish.

Data Collection and Analysis

The questionnaires were filled out online by the participants through one of the online questionnaire/scale preparation and application programs. With the help of lecturers working at the Gaziosmanpaşa University, some of the data collection was conducted through the online distance education portal, and some in face-to-face interactions with the participants. The data collection took an average of 10–15 minutes per participant. The entirety of the data were collected in the 2019–2020 spring semester.

The data analysis used the descriptive statistics of percentage, frequency, mean, and standard deviation, along with the Pearson correlation coefficient and multiple regression analysis. The SPSS 18.0 package program was used for the analyses.

Ethics Committee Approval

This study was conducted based on the permission obtained from the Tokat Gaziosmanpaşa University Social and Human Sciences Research Ethics Committee dated 02.03.2020, session number 02, and decision number 08.

Findings

Table 1 presents the descriptive statistics of the university students' academic procrastination tendencies, MA, and the sub-dimensions of MA, which are personal, organizational, and judgmental awareness.

Table 1. Descriptive statistics

Variable	N	Minimum	Maximum	$\bar{X}$	Ss
AP	375	1.00	4.25	2.13	.62
MA	375	1.39	5.00	3.79	.63
PA	375	1.25	5.00	3.83	.65
OA	375	1.67	5.00	3.87	.73
JA	375	1.25	5.00	3.59	.83

AP: Academic Procrastination, MA: Metacognitive Awareness, PA: Personal Awareness, A: Organizational Awareness, JA: Judgmental Awareness

As shown in Table 1, the academic procrastination scale mean score was 2.13; the total mean score of the MCAS was 3.79; the PA dimension mean was 3.83; the OA dimension mean was 3.87; and the JA dimension mean was 3.57. Both scales consisted of a 5-point Likert-type rating. High scores on the academic procrastination scale indicated high levels of academic procrastination, and high scores on the MCAS signified high levels of MA. One can derive that, students displayed a lower than medium and close to low level of academic procrastination behavior, and a higher than medium level of MA. Among the sub-dimensions of MA, OA has the highest mean score, and JA has the lowest.

Table 2 presents the correlation analysis between MA and its sub-dimensions and academic procrastination behavior.

Table 2. Correlation coefficients between metacognitive awareness and academic procrastination

		PA	OA	JA	MA
AP	Pearson Corr. Coef.	−.405	−.394	−.300	−.422
	p	.000	.000	.000	.000
	N	375	375	375	375

As shown in Table 2, there is a negative, moderate, and statistically significant relationship between academic procrastination behavior and MA ($r = -.422$, $p < .05$). Upon examining the relationship of PA, OA, and JA with academic procrastination behavior separately, there were statistically significant relationships between all three dimensions and academic procrastination. The relationship between PA and academic procrastination was at a moderate level ($r = -.405$, $p < .05$), whereas the relationship between OA and JA and academic procrastination was at a low level ($r = -.394$, $p < .05$; $r = -.300$, $p < .05$).

The study used stepwise multiple regression analysis to determine which of the personal, organizational, and judgmental awareness variables—the sub-dimensions of MA—are effective in predicting academic procrastination behavior.

The assumptions were checked before starting the analysis. The normal distribution and homogeneity distribution of residuals are presented in Figures 1-3. As seen in the figures, there was no violation that would prohibit the continuation of the analysis.

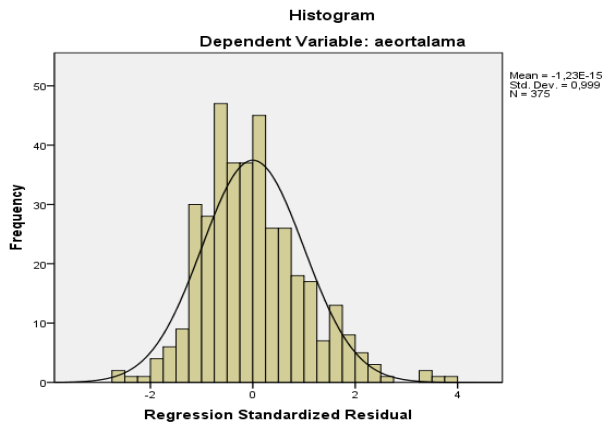

Figure 1. Residual distribution histogram

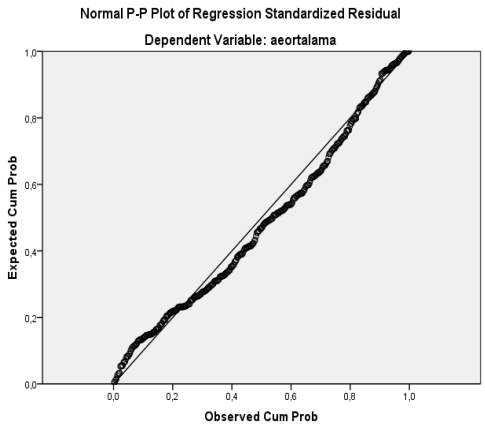

Figure 2. The P-P graph of the residuals

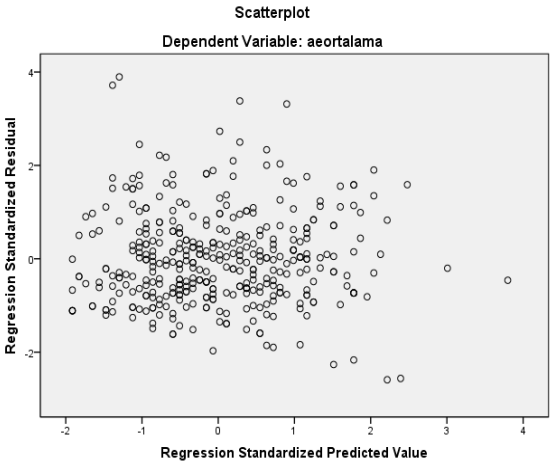

Figure 3. The scatterplot of the residuals

Table 3 presents the results of the multiple regression analysis.

Table 3. Regression analysis results to predict academic procrastination

Model	*B*	SE_B	*β*	*t*	*p*	*R*	R^2	*F*	*p*
Constant	3.634	.178		20.42	.000	.405	.164	72.99	.000
PA	−.391	.046	−.405	−8.54	.000				
Constant	3.774	.181		20.81	.000				
PA	−.243	.065	−.251	−3.72	.000	.431	.185	42.36	.000
OA	−.183	.058	−.213	−3.16	.002				

From Table 3, it can be seen that PA and OA, which are two of the three dimensions of MA, significantly predict academic procrastination behavior. Judgmental awareness was excluded from the analysis because it did not significantly contribute to the model. The first model analyzed PA only, while the second model analyzed PA and OA together. Both models are statistically significant ($F_{df\,(1.373)} = 72.99$, $p < .05$; $F_{df\,(1.372)} = 42.36$, $p < .05$). Personal awareness, considered alone, explains about 16% of the variance in academic procrastination; when considered together with OA, it explains 18.5% of the variance. Effect sizes (Cohen f^2) were .196 for the

first model, meaning medium effect (*VIF* = 1.196, tolerance = .836), and .227 for the second model, meaning medium effect also (*VIF* = 1.227, tolerance = .815) (see Cohen, 1988).

The study used dummy coding on the gender variable to determine the moderator role of gender in the relationship between MA and academic procrastination (Figure 1). The male category was accepted as the reference value and coded female students as 1 and male students as 0. Further, the interaction between the MA variable and the gender variable was dummy-coded. In addition, the regression analysis included MA in the first model and the interaction variable in the second model in predicting academic procrastination.

Table 4. The moderation analysis for the variable of gender

Model	*B*	SE_B	β	*t*	*p*	*R*	R^2	R^2 *change*	
								F	*p*
Constant	3.715	.178		20.86	.000	.422	.178	80.88	.000
MA	−.417	.046	−.422	−8.99	.000				
Constant	3.735	.179		20.87	.000				
MA	−.433	.048	−.438	−8.94	.000	.425	.181	1.25	.264
Interaction (MA*Gender)	.017	.016	−.055	1.12	.264				

Model[1]*:* $F_{df(1,373)} = 80.88\ p < .05$*; Model*[2]*:* $F_{df(2,372)} = 41.09\ p < .05$

As presented in Table 4, MA is a significant variable in predicting academic procrastination behavior (β = −.422, $p < .05$). The MA variable explains 17.8% of the variance in academic procrastination behavior. There is a statistically significant decrease in academic procrastination behavior as MA increases. The moderator role of gender in this relationship is not statistically significant [$\Delta R^2(R^2 2\text{-}\ R^2 1) = .003$, p = .264; β = −.055, p = .264]. Being male or female does not significantly differentiate the relationship between the participants' MA and academic procrastination behavior. The effect sizes (Cohen f^2) were .216 for the first model (*VIF* = 1.216, tolerance = .822) and .221 for the second model (*VIF* = 1.221, tolerance = .819). Both effect sizes indicate medium effect.

The study used dummy coding on the grade level variable to determine the moderator role of grade level in the relationship between MA and academic procrastination. The first-year student group was the reference category, based on the hypothesis that university education level would increase MA. Dummy coding was performed for the second, third and fourth-year students. The interaction of the MA variable with the dummy coding of each grade level was then calculated. The regression analysis included MA in predicting academic procrastination in the first model, and the three interaction variables obtained together with MA were included in the second model during the analysis.

Table 5. The moderation analysis for the variable of grade level

Model	*B*	SE_B	β	*t*	*p*	*R*	R^2	R^2 *change*	
								F	*p*
Constant	3.715	.178		20.86	.000	.422	.178	80.88	.000
MA	−.417	.046	−.422	−8.99	.000				
Constant	3.687	.179		20.58	.000				
MA	−.404	.050	−.409	−8.14	.000				
Interaction (MA*2nd grade)	.024	.026	.050	.908	.364	.430	.185	1.05	.369
Interaction (MA*3th grade)	−.010	.021	−.029	−.481	.631				
Interaction (MA*4th grade)	−.019	.020	−.055	−.908	.364				

Model[1]*:* $F_{df(1,373)} = 80.88\ p < .05$*; Model*[2]*:* $F_{df(4,370)} = 21.02\ p < .05$

As shown in Table 5, the grade level variable did not play a moderator role in the relationship between MA and academic procrastination [$\Delta R^2\ R^2 2\text{-}\ R^2 1) = .007$ p = .369]. The beta coefficients of the three interaction values created are likewise not statistically significant (β = .050 p = .364; β = −.029 p = .631; β = −.055 p = .364). Being in different grade levels does not cause a significant difference in the relationship between their MA and academic procrastination behavior. The effect sizes (Cohen f^2) were .216 for the first model (*VIF* = 1.216, tolerance = .822) and .227 for the second model (*VIF* = 1.227, tolerance = .815). Both effect sizes indicate medium effect.

Discussion, Conclusion, and Recommendations

The results indicate that university students tend to have a lower than medium level of academic procrastination. This is similar to the results of Aydın and Koçak's (2016) research also conducted on university students. Ilter

(2019) worked with vocational school students and discovered a low to moderate level of academic procrastination behavior. Coşar (2019) and Vural and Gündüz (2019), in their research with pre-service teachers, found that the students demonstrated above average and moderate levels of academic procrastination behavior, respectively.

This study found that university students had a higher than moderate level of MA. Aykut et al. (2016) and Deniz et al. (2014), in their studies in which they investigated pre-service teachers'MA, similar to this study, found that students had a higher than moderate level and high level of MA, respectively. From the sub-dimensions of MA, OA has the highest mean score, and JA has the lowest mean score. Organizational awareness refers to the steps of planning in the learning or problem-solving process and implementing this plan; JA refers to the evaluation of alternative methods after completing the process (Fırat-Durdukoca, 2013). Accordingly, one can derive that the participant students are more interested in the learning or problem-solving process and give relatively less importance to the evaluation stage after the completion of the process.

There was a negative, moderate, and statistically significant relationship found between academic procrastination behavior and MA. The study results of Bedel (2017) and Wong (2012), who investigated a similar relationship, support the findings of this study, whereas the findings of Vural and Gündüz (2019) and Çırıkçı (2016) differ. Vural and Gündüz (2019) and Çıkrıkçı (2016) identified a low level of correlation between the two variables. Considering the relationships in the context of sub-dimensions, there was a moderate relationship between self-awareness and academic procrastination, and there were low-level statistically significant relationships between OA and JA and academic procrastination. Personal awareness refers to what individuals do to perceive and solve a subject or problem that is related to them. Accordingly, one can interpret that students can significantly reduce academic procrastination behavior if they recognize their strengths and weaknesses, become aware of the conditions under which they can learn more easily, know what they need in problem-solving, and create their own strategies (Fırat-Durdukoca, 2013).

Personal awareness and OA, which are sub-dimensions of MA, significantly predict academic procrastination behavior. Judgmental awareness does not significantly contribute to the model. Personal awareness alone explains about 16% of the variance in academic procrastination; when considered together with OA, it explains 18.5% of the variance. Metacognitive awareness is a significant variable in predicting academic procrastination behavior when considered as a whole. The MA variable explains 17.8% of the variance in academic procrastination behavior. There is a statistically significant decrease in academic procrastination behavior as MA increases. Vural and Gündüz (2019) calculated the explanatory power of cognitive awareness for the variance in academic procrastination behavior as 27%, whereas Bedel (2017) calculated the explanatory power of metacognitive regulation and mindfulness for the variance in academic procrastination behavior as 37%. The models are statistically significant in both studies. According to the current study, although the percentages of explanation differ, they show mutually supportive results in terms of finding a significant relationship between the two variables. Bytamar et al. (2017) stated that metacognitive beliefs about academic procrastination behavior significantly predict academic procrastination, and this variable had an explanatory power of 5% of the variance in academic procrastination. Considering that metacognitive beliefs about academic procrastination are related to general metacognitive awareness, one can say that the results of Bytamar et al. (2017) and this study support each other. In his experimental research, Sheykholeslami (2017) concluded that cognitive and metacognitive strategies reduce academic procrastination behavior in students with low academic achievement. The results herein also provide additional evidence for the significant relationship between the two variables.

The gender and grade level variables did not play a moderator role in the relationship between MA and academic procrastination behavior. Based on these findings, the following recommendations were made:

1. As students' JA has a low average compared with other dimensions of MA, researchers can conduct informative studies on students to evaluate the process after the problem-solving and learning processes.
2. There is a significant relationship between MA and academic procrastination, and MA is a variable that significantly predicts academic procrastination. Because academic procrastination decreases as MA increases, researchers can conduct studies to increase MA.
3. Researchers can investigate the variables that play a moderator role in the relationship between MA and academic procrastination.

Author Contribution Rate

This study was completed by one researcher.

Statement of Interest

There is no conflict of interest in this study.

Statement of Research and Publication Ethics

I declare that this study complies with research and publication ethics.

Ethics Committee Approval

This study was conducted based on the permission obtained from the Tokat Gaziosmanpaşa University Social and Human Sciences Research Ethics Committee dated 02.03.2020, session number 02, and decision number 08.

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