



**AN INVESTIGATION OF SELF-EFFICACY, LOCUS OF CONTROL,
AND ACADEMIC PROCRASTINATION AS PREDICTORS OF
ACADEMIC ACHIEVEMENT IN STUDENTS DIAGNOSED
AS GIFTED AND NON-GIFTEDⁱ**

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Abstract:

The overall objective of this study was to investigate self-efficacy, locus of control, and academic procrastination as predictors of academic achievement in students identified as gifted or non-gifted. Another purpose of the study was to analyze whether there was a difference between the self-efficacy, locus of control, and academic procrastination scores of the students in both groups. The study group consisted of 6th, 7th, and 8th-grade students, some of whom were Science and Art Centers students who were diagnosed as gifted, while others were public school students who were not diagnosed as gifted. The data of the study were collected using the Self-Efficacy Questionnaire for Children, the Internal-External Locus of Control Scale, and the Academic Procrastination Scale. The Pearson Product-Moment Correlation Coefficient, the Independent Samples *t*-Test, and simple and multiple linear regression were employed to analyze the data. According to the results, it can be said that academic procrastination has an important role in the academic achievement of gifted students, whereas self-efficacy, locus of control, and academic procrastination have a significant part to play in the academic achievement of non-gifted students. The comparison of self-efficacy, locus of control, and academic procrastination scores of gifted and non-gifted students indicated that the self-efficacy scores of gifted students were significantly higher than those of the non-gifted.

Keywords: academic achievement, academic procrastination, gifted students, locus of control self-efficacy

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1. Introduction

Success, which can be defined as reaching a designated goal and getting what is intended, can be articulated as the target behaviors of a student in an educational program when considered from an educational point of view (Sarier, 2016). Academic achievement, which means achieving the curricular goals, is the basic measurement that shows the attained level of education (Eni-Olorunda and Adesokan, 2015). In the educational literature, this basic measurement is generally recognized as defining the academic achievement according to the results of the evaluation of the standardized academic achievement tests (Carpenter, 2007). In the 20th article of the Regulation of the Ministry of National Education Preschool and Primary Educational Institutions (2014) is the description that "*student achievement is assessed based on school tests, attendance to course activities, and the scores obtained from, if any, project studies*".

As is known, the academic achievement of students is affected by many factors. Among them, intelligence is one of the most important predictors of academic success. The correlation between intelligence level and academic achievement is about 0.50. This level of correlation suggests that intelligence can account for 25% of academic success (Sak, 2010). Furthermore, general competence is known to be one of the factors affecting academic achievement (Eski, 1980). It is stated that the superiority the individuals with superior intelligence or talents exhibit in the field of education does not stem from school-based education, but comes from their individual characteristics (Witty and Jenkins, 1934). A common definition of superior intelligence and talent concepts in Turkey is found in the regulation for Science and Art Centers (BILSEM), where gifted students are diagnosed and their education is carried out. In the 4th article of the BILSEM Regulation (2007), the phrase 'gifted student' is used to refer to students who are considered to have superior intelligence and talents. In this definition, the term 'gifted student' is defined as 'a student with a capacity of intelligence, creativity, art, and leadership or with a high level of performance in special academic fields compared to his/her peers. For this reason, the term 'gifted' student was used for the students who are thought to have the characteristics mentioned in this study.

One of the notions related to academic success other than intelligence or talent is self-efficacy beliefs (Bandura, 1977; Pastorelli et al., 2001). Self-efficacy was originally proposed by Bandura (1977). This notion is defined as the thoughts of an individual about the skills that s/he possesses and perceives (Bandura, 1998, 2006; Pajares and Usher, 2008; Schunk, 1990). Self-efficacy is an important variable in understanding achievement (Schunk, 1984). Self-efficacy, which has been studied extensively with academic achievement, has been frequently investigated as an effective variable for achievement (Carpenter, 2007). Pajares and Usher (2008) reviewed the results of the last 30 years of research and found that students' thoughts about their academic skills influenced countless academic behaviors. In this context, self-efficacy beliefs help to make predictions about academic tasks and school achievements at the maximum level (Pajares and Usher, 2008). Studies report that academic achievement and self-sufficiency are highly related and that self-sufficiency is one of the important predictors

of academic success (Gold, 2010; Graham and Weiner, 1996; Pajares, 1996; Pajares and Kranzler, 1995; Pajares and Usher, 2008; Schunk, Zimmerman, 2007; Tella, Tella and Adika, 2008; Zimmerman, 2000). Moreover, the results of meta-analysis studies show that there is a positive relationship between self-efficacy beliefs and academic achievement (Carpenter, 2007; Multon, Brown and Lent, 1991).

Studies investigating the relationship between academic achievement and self-efficacy in gifted students are less in number than studies carried out with the normal population. Although there are a limited number of studies in this area, there are some conclusions about the possible relationship between self-efficacy and academic achievement in gifted students. Because it is stated, that academic self-efficacy in gifted students is a significant predictor of academic skills of the individual (Tan and Tan, 2014). Given that general self-efficacy also covers self-efficacy, it can be thought that a student with a high general self-efficacy score might be academically successful. A study (Malpass, O'Neil, and Hocevar, 1999) investigating the relationship between self-efficacy and mathematical achievement in gifted students found that there was a positive relationship between the two. These limited studies can be considered as a sign that there may be a relationship between self-efficacy and academic achievement in gifted students.

Another notion that may have an impact on academic achievement is locus of control, which was first proposed by Rotter (1996). According to Rotter (1966), locus of control is defined as an individual's thinking that the outcome of his/her behaviors is under his/her control or external locus. According to another definition, locus of control is defined as the thoughts of an individual on the main source of his/her behaviors (Gujjar and Aijaz, 2014). Rotter (1966) describes individuals who accept the positive and negative outcomes of their behaviors as a result of their own behaviors as having internal locus of control, while defining those who think these outcomes are out of their control (luck, fate, other people etc.) as having external locus of control. When the definitions of locus of control are viewed in terms of learning processes, locus of control can be thought to be an influential factor in the learning process. For example, if an individual considers that his/her behaviors will be effective in the learning process, s/he will spend more effort for learning and more learning will occur. As a matter of fact, it is said that locus of control is the main factor in understanding the nature of learning processes (Rotter, 1966). In addition, it is possible to come across opinions that locus of control can be used to explain the school performance of a student (Howerton, Enger, and Cobbs, 1992). Studies have shown that there is a clear relationship between locus of control and academic achievement (Brown, 1980; Gifford, Briceño-Perriott and Mianzo, 2006; Nowicki and Strickland, 1971). According to the results of studies, it is reported that as the tendency of individuals to have an internal locus of control increases, academic achievements also increase (Gujjar and Aijaz, 2014; Wood, Saylor and Cohen, 2009), and that locus of control predicts academic achievement significantly (Buluş, 2011; Mehda-Gyanodaya, 2009).

Rinn, Boazman, Jackson, and Barrio (2014) indicated that the talents gifted students have may play a role in their locus of control. When the personal

characteristics of gifted students are examined, it can be said that these students have some characteristics related to the locus of control. These students are known to be individuals who do not need to be motivated by other people for anything they are interested in, have self-control, and have an internal motivation (Akarsu, 2004; Akkanat, 2004; Ataman, 2004; Özbay, 2013). It is also known that gifted children characteristically have a greater internal locus of control at an earlier age than the average children (Clark, 2015). Many of the studies conducted so far have shown that gifted students have internal locus of control (Collier, Jacobson and Stahl, 1987; Harty, Adkins, and Hungate, 1984; Heller and Ziegler, 1996; Siegle and Reis, 1998; Yong, 1994). However, the fact that locus of control scores of gifted students are higher than those of average students, that is, they have a more internal locus of control tendency, may not mean that this has an effect on their achievements. For example, in a study (McClelland, 1987), the 6th, 7th, and 8th grade gifted students were examined separately by grades, and no significant difference was found between the locus of control scores of successful and unsuccessful gifted students.

Another variable considered to be effective on academic achievement within the scope of this study is academic procrastination (Akbay and Gizir, 2010; Uzun and Demir, 2015). This concept is defined as leaving and procrastinating academic responsibilities to the last moment, such as studying for exams or completing assignments (Milgram and Tenne, 2000; Nábělková and Ratkovská, 2015), which occur in academic dynamics (Khan, Arif, Noor and Muneer, 2014). According to another view, academic procrastination is seen as a phenomenon emerging as a result of learned behaviors (Deniz, Traş and Aydoğan, 2009). It can be said that individuals who exhibit academic procrastination traits disrupt their academic affairs in some way, and hence they are in trouble (Akbay and Gizir, 2010). When the studies investigating the factors that cause academic procrastination are examined, such major factors as fear of failure, tendency to perfectionism, self-efficacy, motivation, irrational beliefs, self-perception, and fear of being negatively evaluated are observed to lead to academic procrastination (Ackerman and Gross, 2005; Balkıs, Duru, Buluş and Duru, 2006; Berber-Çelik and Odacı, 2015; Özer Uzun, 2009; Rothblum, 1990; Solomon and Rothblum, 1988; Yaakub, 2000). When academic procrastination is viewed in terms of the academic achievements of students, it is seen as a factor preventing academic achievement of students (Hen and Goroshit, 2014). Studies investigating the relationship between academic procrastination and academic achievement show that there is a negative relationship between the two (Aremu, Williams and Adesina, 2011; Balkıs, 2013a, 2013b; Balkıs and Duru, 2010; Balkıs, Duru, Buluş and Duru, 2006; Bezci and Sungur-Vural, 2013; Çakıcı, 2003; Nábělková and Ratkovská, 2015; Rotenstein, Davis, and Ronald, 2013; Rothblum, Solomon and Murakami, 1986).

Academic procrastination is a problem not only experienced by individuals who do not know how to study or learn, but also by perfectionists who want to do their best. Many gifted students challenge themselves to achieve excellence by setting challenging goals for themselves (Kanli, 2011; LoCicero and Ashby, 2000; Schuler, 2000). These students do not only want to do the job but also do it perfectly (perfectionism). For this

reason, they can spend a lot of time hanging around unnecessary details. This can sometimes result in a failure to complete the work engaged in (Manning, 2006; Özbay, 2013). In this case, individuals who have high goals can have "either all or nothing" thoughts. When they end up with failure, this may cause perfectionists to give up quickly upon understanding that they cannot always be perfect (Leana-Taşçılar, Özyaprak, Güçyeter, Kanlı and Camci-Erdoğan, 2014).

In short, studies in the related-literature conducted with student groups in the general population show that self-efficacy, locus of control, and academic procrastination are significant variables as predictors of academic achievement. It has been found in studies that these concepts have important relationships with academic achievement. But the determination of the common predictability of these concepts together on academic achievement suggests that it will provide a more holistic view in understanding the academic achievement. In addition, it can be said that determining the important variables related to academic achievement will play an important role in working out the academic failures to be experienced. Nonetheless, given that studies on the education of gifted students in our country are relatively fewer (Akkaş and Eker, 2013), need for studies on the educational processes of gifted students becomes obvious, because gifted individuals may differ compared to their peers in terms of many characteristics, especially their cognitive characteristics (Özbay and Palanci, 2011; Özsoy, 2014). In addition, these students may also need different educational approaches as they have different characteristics compared to the normal student population. Therefore, it is important to examine the factors known to be associated with academic achievement (self-efficacy, locus of control, academic procrastination) in gifted students group as well. It is thought that determining the similarities and differences in both student groups and revealing the reasons of these differences will help create a perspective and a roadmap for the educational approaches to students. Because of the reasons mentioned so far, this study aimed to investigate self-efficacy, locus of control, and academic procrastination, which are known to be related to the academic achievement, as predictors of the academic achievement for both groups (diagnosed as gifted or non-gifted / general population). In addition, the study also aimed to investigate whether the self-efficacy, locus of control, and academic procrastination scores of the students in both groups would show any difference.

2. Methodology

This study used the relational screening model, one of the quantitative research methods, in order to determine the variables that predict the academic achievement of students diagnosed or not diagnosed as gifted.

2.1 Research Group

The participants of this study consisted of 6th, 7th and 8th-grade students who were diagnosed or not diagnosed as gifted. The study was conducted at four different BILSEM institutions and state middle schools in Turkey. Three of the BILSEM

institutions are in three different provinces of the Central Black Sea Region and one in a province in the Central Anatolia Region. There were a total of 167 students, diagnosed as gifted (90 females, 77 males) and 329 state middle school students (167 females and 162 males), who were not diagnosed as gifted. A proper sampling method was used to form the study group. By means of this sampling method, available individuals who can participate in the research in terms of time, place and possibility were determined by the researcher and the participants were involved in the study on a voluntary basis.

2.2 Data Collection Tools

2.2.1 Self-Efficacy Questionnaire for Children

Developed by Muris (2001) and adapted to Turkish by Telef (2011), this scale was designed to assess social, academic, and emotional self-efficacy of adolescents between 14-17 years old. The scale consists of three subscales: social self-efficacy, academic self-efficacy, and emotional self-efficacy. It has a total of 21 items and there are seven items in each subscale. Total self-efficacy score is calculated by adding the scores of sub-factors. There are no reversely scored items on the scale. The highest score that can be obtained from the scale is 105 and the lowest is 21. A high score obtained from the scale points out a high level of self-efficacy for children, whereas a low score indicates a low level of self-efficacy level for children. The Cronbach alpha internal consistency coefficients of the self-efficacy questionnaire for children were calculated .86 for the overall scale, .84 for academic self-efficacy, .64 for social self-efficacy, and .78 for emotional self-efficacy. The Cronbach alpha internal consistency coefficient for this study was found to be .83.

2.2.2 The Internal-External Locus of Control Scale

Developed by Nowicki and Strickland (1973) and adapted to Turkish by Öngen (2003), this scale was designed to assess the locus of control level of individuals. The original form of the scale has 40 items, while the Turkish form is made up of 29 items. A high score obtained from the scale indicates that the individual has internal locus of control, while a low score shows the person has external locus of control. The lowest score that can be obtained from the scale is 29 and the highest is 116. A factor analysis was performed to analyze the construct validity of the scale, and as a result of this analysis, 11 items were removed from the scale. Cronbach alpha internal consistency and Spearman-Brown split-half reliability coefficients were calculated for subscales and overall scale to study the reliability of the scale. The calculated internal consistency coefficient was found to be .74 for the overall scale, while this value was found to be .76 in this study.

2.2.3 The Academic Procrastination Scale

This scale was developed by Çakıcı (2003) to determine whether the tasks that students are responsible for fulfilling in their educational lives such as studying, preparing for exams, and project preparation are procrastinated or not. The scale was improved using data from students attending high school and university. The content of the scale

consists of a total of 19 items, 12 of which are negative and 7 of which are positive involving the tasks that students have to perform during their school life. The highest score that can be obtained from the scale is 95, and the lowest is 19. A high score on the scale indicates that the individual is an academic procrastinator. As a result of the analysis performed for the assessment reliability, the Cronbach alpha internal consistency coefficient of the scale was found to be .92. According to the Spearman-Brown half-split reliability results, the reliability coefficients were found .87.9 for the first half of the 10-item test and .86 for the second half, and .85 for the overall test. The Cronbach alpha internal consistency coefficient for the reliability of the measure in this study was found to be .87. On the other hand, the study group involved in the development of the scale consisted of high school and university students. Due to the fact that the study group in this study was composed of middle school students, it was necessary to retest the factor structure of the scale for this study group. To test this instance, it was decided to perform the Confirmatory Factor Analysis (CFA). χ^2 degree of freedom (sd), GFI, CFI, IFI and RMSEA goodness of fit values were used in the analysis of the tested model. As a result of the analysis, $\chi^2= 737.14$, $p < .001$; $\chi^2/ sd = 4.3$; GFI = .86; CFI = .93; IFI = .93; RMSEA = .09 values were obtained. The fact that χ^2/ sd was less than 3 (Kline, 2005; Sumer, 2000), GFI was greater than .85 (Çelik and Yılmaz, 2016; Marcoulides and Schumacher, 2001), CFI was greater than .90 (Hu and Bentler, 1999; Tabachnick and Fidell, 2001), IFI was greater than .90 (Meydan and Şeyen, 2015), and RMSEA was less than .10 (Kelloway, 1989; Tabachnick and Fidell, 2001) showed that the studied model fitted. Therefore, when the fit values were examined, it can be said that the current form of the scale was acceptable.

2.2.4 Academic achievement

According to the Preschool Education and Primary Educational Institutions Regulations (2014), academic achievement in middle school students is characterized by scores. The end-of-term and end-of-year achievement scores are calculated over 100. Students who get 45.00 and over, out of 100, are evaluated as successful. Therefore, the end-of-year scores that students last get were accepted as achievement scores in this study. The end-of-year achievement scores of the students were obtained by asking the students.

2.2.5 Data Collection

Necessary permissions were obtained from the General Directorate of Special Education and Guidance Services of the Ministry of National Education for BILSEM institutions and from the related provincial directorate of national education for applications at state schools. The data collection process was carried out in the first semester of the 2016-2017 academic year. The implementation of the scales was carried out in the classroom environment by the researcher himself or by individuals who were proficient and adequately informed about the application of the scales. At the outset, the participants were informed about the purpose and significance of the study and the data collection tools. Participation in the study was based on voluntary action. The participants were informed about how to fill in the questionnaires and the issues that

need attention, and their questions were answered by the person applying the questionnaire. The questionnaires were administered to the students individually or in groups. It took the students about 25-30 minutes to fill in the questionnaires.

2.2.6 Data Analysis

Statistical analyses of the data obtained from the measurement tools were performed using IBM SPSS 22 and LISREL 8.8 statistical software packages. The scores of the students who were diagnosed or not diagnosed as gifted were analyzed according to the boxplot graphics and z scores. When the data were examined according to the total scores obtained from the scale, 4 outliers from the data set belonging to gifted students and 20 outliers from that of non-gifted students were excluded from the analysis. The kurtosis and skewness coefficients of the scores that the students got from the questionnaires and the normal curves plotted on the histograms of the data were examined. As a result, it was found that the scores did not have a significant deviation from the normal distribution (Çokluk, Şekercioğlu and Büyüköztürk, 2016). The Pearson Product-Moment Correlation analysis was performed to determine whether there was a relationship between self-efficacy, locus of control, academic procrastination, and academic achievement variables in students. Multiple changes between variables, variance inflation, tolerance values, predicted values standardized with standardized deviations were examined and it was found that the data set was suitable for the regression analysis. A simple and multivariate regression analysis was conducted to examine the power of variables related to academic achievement in both student groups to predict the academic achievement. In addition, independent samples t-test was used to examine whether there was a significant difference between self-efficacy, locus of control, and academic procrastination scores in both student groups. Moreover, the Confirmatory Factor Analysis was performed to retest the factor structure of the Academic Procrastination Scale also in middle school students, which is used to measure students' academic procrastination tendencies.

3. Findings

The coefficients for the Pearson Product-Moment Correlation analysis between academic achievement and self-efficacy, locus of control, and academic procrastination in students diagnosed or not diagnosed as gifted were calculated separately for both groups and they were presented in Table 1.

Table 1: Coefficients for the correlation between academic achievement and self-efficacy, locus of control, and academic procrastination in students diagnosed or not diagnosed as gifted

Variable	Academic achievement	
	Diagnosed as Gifted**	Not diagnosed as Gifted***
Self-efficacy	.02	.31*
Locus of control	.14	.44*
Academic procrastination	-.16*	-.37*

* $p < .05$; ** $n = 167$; *** $n = 329$

As is shown in Table 1, there was a significant negative relationship between the dependent variable 'academic achievement' and the independent variable 'academic procrastination' in gifted students ($r = -.16$). On the other hand, no significant relationship was found between academic achievement and independent variables 'self-efficacy' and 'locus of control'. In non-gifted students, a significant positive relationship was found between the dependent variable 'academic achievement' and 'self-efficacy' ($r = .31$) and 'locus of control' ($r = .44$), while a significant negative relationship ($r = -.37$) was determined between 'academic achievement' and 'academic procrastination'. Following the Pearson Product-Moment Correlation analysis, a simple linear regression analysis was performed to examine to what extent academic procrastination, having a significant relationship with academic achievement in gifted students, predicted academic achievement scores. On the other hand, two separate regression analyses were conducted to examine to what extent self-efficacy, locus of control, and academic procrastination predict academic achievement in non-gifted students. The results of the analysis are shown in Table 2.

Table 2: The results of the regression analyses related to the prediction of academic achievements in students diagnosed or not diagnosed as gifted

Diagnosed as Gifted	Variable	B	β	t	p	R	R ²	
	Constant	98.89			155.69	.000	.16	.03
Academic procrastination		-.03	-.16	-2.05	.042*			
Not Diagnosed as Gifted	Variable	B	Standard Deviation	β	t	Double r	Section R	R ²
	Constant	52.71	7.62	-	6.91	-	-	.23*
	Self-efficacy	.10	.05	.11	1.89	.31	.10	
	Locus of control	.35	.06	.32*	5.47	.44	.29	
	Academic procrastination	-.12	.05	-.15**	-2.52	-.37	-.14	

* $p < .001$ ($p = .000$), ** $p < .05$ ($p = .012$)

As is seen in Table 2, academic procrastination was a significant predictor of academic achievement in gifted students [$F_{(1,165)} = 4.21, p < .05$]. The contribution of academic procrastination to the total variance of academic achievement was 3% ($R^2 = .03$). According to the findings in Table 2, academic procrastination made a negative contribution to academic achievement ($\beta = -.16$). In non-gifted students, locus of control and academic procrastination were observed to predict academic achievement significantly [$F_{(3, 325)} = 31.88, p < .001$]. The contribution of locus of control and academic procrastination to the total variance of academic achievement was 23% ($R^2 = .23$). Locus of control made a positive contribution to the model ($\beta = .32$), while the contribution of academic procrastination was negative ($\beta = -.15$). The contribution of self-efficacy to the model was insignificant. Although there was a significant relationship between self-efficacy and academic achievement, the contribution of self-efficacy in the model was insignificant due to other variables with stronger correlations in the model.

Table 3: The results of t-test on self-efficacy, locus of control, and academic procrastination scores of students diagnosed or not diagnosed as gifted

Variable	Diagnosis of giftedness	n	\bar{X}	Sd	t	p
Self-efficacy	Gifted	167	81.68	11.38	3.29	.001*
	Non-gifted	329	78.26	10.72		
Locus of control	Gifted	167	89.23	10.71	-.17	.862
	Non-gifted	329	89.40	8.86		
Academic procrastination	Gifted	167	39.68	13.16	1.19	.236
	Non-gifted	329	38.26	12.22		

*p = .001

According to Table 3, it was found that there was a significant difference between the gifted and non-gifted students in terms of only self-efficacy scores. In other words, self-efficacy scores of the gifted students were significantly higher than those of the non-gifted students. To interpret the size of the difference between the mean scores quantitatively, Cohen's *d* effect size value was calculated and the effect size value was found to be .31 (moderate effect) (Cohen, 1988). Although the scores for the locus of control and academic procrastination did not indicate a difference in terms of being gifted or non-gifted, the mean of the scores that the students obtained from these questionnaires suggested that both student groups had a tendency to have an internal locus of control (*min possible score from the questionnaire is 29 and the max is 116*) and a less inclination to academic procrastination (*min possible score from the questionnaire is 19 and the max is 95*).

4. Discussion, Conclusions and Recommendations

The overall objective of this study was to demonstrate to what extent academic achievement was predicted by self-efficacy, locus of control, and academic procrastination in students diagnosed and not diagnosed as gifted. Another aim of the study was to investigate whether the scores for self-efficacy, locus of control, and academic procrastination differed by being gifted or non-gifted. Firstly, the relationship between academic achievement and self-efficacy, locus of control, and academic procrastination was investigated in gifted students. As a result of the correlation analysis, the relationship between academic achievement and academic procrastination was observed to be significant, whereas the relationship between academic achievement and self-efficacy and locus of control was insignificant. The findings related to the relationship between academic procrastination and academic achievement revealed that there was a low level significant negative correlation between the two.

According to this result, it can be said that as academic procrastination behavior increases in gifted students, their academic achievement will decrease. According to the result of the analysis conducted to test the predictiveness of the academic procrastination, which is significantly related to the academic achievement of gifted students, it was found that academic procrastination predicted academic achievement significantly but on a low level. This finding points out that academic procrastination

behavior may also exist in gifted students and that these students may have low academic achievement as a result.

Another finding of the study was that no significant relationship was found between self-efficacy scores and academic achievement in gifted students. However, some studies on this topic, though limited in number, found a relationship between self-efficacy and academic achievement (Merriman, 2012). In a study by Malpass, O'Neil, and Hocevar (1999), it was observed that there was a positive relationship between self-efficacy levels of gifted students and their mathematical achievements. In addition, Tan and Tan (2014) pointed out that academic self-sufficiency was a significant predictor of academic achievement in gifted individuals. The finding of this study puts forth a difference compared to those of the studies mentioned in the related literature. However, given that, there is little research on the topic and that the findings are limited; more studies are needed to be able to evaluate the results of this study accurately.

Finally, as a result of the correlation analysis performed with the data set of the gifted students, no significant relation was observed between locus of control and academic achievement. A review of the related literature has revealed the existence of studies with different findings on the relationship between locus of control and academic achievement in gifted students. It was found in McClelland's (1987) study that there was no significant difference between the locus of control scores of gifted students with high and low achievements. On the other hand, however, Laffoon (1989) found that gifted students with high academic achievement had higher scores for internal locus of control than those of low-achieving gifted and normal students (Rinn, Boazman, Jackson, and Barrio, 2014). It seems that more studies are needed on the topic to accurately interpret this finding of the study, too.

Another objective of this study was to demonstrate to what extent academic achievement was predicted by self-efficacy, locus of control, and academic procrastination in students who were not diagnosed as gifted. According to the results of the Pearson Product-Moment Correlation analysis, there was a significant relationship between academic achievement and self-efficacy, locus of control, and academic procrastination. Similar to the findings of the studies in the related literature, self-efficacy (Carpenter, 2007; Cheng and Westwood, 2010; Multon, Brown, and Lent, 1991; Telef, 2011) and locus of control (Buluş, 2011; Gujjar and Aijaz, 2014; Ladari, Sadeghi, Haghshenas, Mousavi and Cherati, 2010; Nowicki and Strickland, 1971; Özen Kutanis, Mesci and Övdür, 2011; Wood, Saylor, and Cohen, 2009) were found to have a positive relationship with academic achievement, while academic procrastination (Balkıs, 2013; Balkıs, Duru, Buluş and Duru, 2006; Berber Çelik and Odacı, 2015, Çakıcı, 2003; Duru and Balkıs, 2014; Nagesh, Shrudha, and Goud, 2013; Rotenstein, Davis and Ronald, 2013; Rothbulum, Solomon and Murakami, 1986) had a negative relationship with academic achievement.

The regression analysis conducted indicated that the strongest correlation was between academic achievement and locus of control. According to this finding, locus of control seems to be an important variable in explaining academic achievement.

Accordingly, it can be said that as the tendency of individuals to have internal locus of control increases, academic achievement will also increase. This points out that increasing academic achievement can be ensured by individuals' shifting their locus of control tendencies towards an internal aspect. The finding that locus of control is a predictor of academic achievement is similar to the results of the previously conducted studies. Tella, Tella, and Adika (2008) found in a study conducted with middle school students that locus of control was a good variable in predicting academic achievement. Similarly, it was also observed in the study of Buluş (2011) that locus of control predicted academic achievement. Another finding was that academic procrastination predicted academic achievement positively and significantly. This result indicates that as students procrastinate fulfilling their academic tasks, their academic achievements will decrease. Therefore, individuals must not procrastinate their academic tasks to get high academic achievement. The findings obtained are supported by previous studies. It was observed according to the findings of the studies conducted by Balkıs and Duru (2010) and Bezci and Sungur Vural (2013) that academic procrastination was the predictor of academic achievement. Along with all these findings, a surprising finding was encountered in the study. While self-efficacy was pointed out as a variable related to academic achievement as a result of the correlation analysis and the literature review, it was found that self-efficacy involved in the model together with other variables did not significantly predict academic achievement. This result points out the effect of common factor variance (Büyüköztürk, 2002; Çokluk, Şekercioğlu and Büyüköztürk, 2016) of internal locus of control and academic procrastination variables on academic achievement. In this context, some suggestions were made based on the results obtained from the study.

As no other studies investigating the characteristics of academic procrastination have been found, further studies to examine the academic procrastination tendencies in gifted students are needed to generalize the outcomes of this study. Also, when the related literature is viewed, it is stated that gifted students are likely to have academic procrastination due to their perfectionism characteristic. Accordingly, in further studies, the predictive role of perfectionism variable in gifted students on academic procrastination can be investigated. In addition, it is also worth investigating in future studies whether perfectionism is a mediating variable between academic procrastination and academic achievement in gifted students.

This study has some limitations in terms of sampling and methodology. Achievement scores of the students were obtained by directly asking students, but not from official sources (e.g. e-school, term report). Although the information supplied by the students was assumed to be accurate because of the limited time and possibilities of the study, obtaining the success scores, which is a variable that can be affected by social likeness, from term reports or e-school system would be much better for the reliability of the study results. As the research was conducted on middle school students, it is recommended that self-efficacy, locus of control, and academic procrastination level of students might be tested to see to what extent they predict academic achievement in different student groups (primary school, high school). Additionally, similar studies can

also be conducted longitudinally in order to see the status of the related characteristics in the process and to generalize the results. On the other hand, the regression analysis used in the study does not give a cause-effect relationship in any real sense. For this reason, experimental studies are needed to test the existence of this relationship.

According to the results of the study, it was found that the variable which likely to have an effect on academic achievements of gifted students was academic procrastination. Therefore, in the guidance or psychological counseling studies intending to boost the academic achievement of gifted students, efforts can be spent to reduce the academic procrastination behaviors. On the other hand, in non-gifted students, psychoeducational studies are needed to increase their self-efficacy, direct their locus of control towards an internal locus of control, and reduce their academic procrastination behaviors. Furthermore, in addition to these attempts, it will be beneficial to highlight these variables in psychological counseling studies intended for students experiencing academic problems.

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