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The Mediator Role of Academic Grit in The Relationship Between Academic Procrastination and Academic Self-Handicapping in Adolescents

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Abstract

This study aims to examine the mediating role of academic grit in the relationship between academic procrastination and academic self-handicapping behaviors of adolescents. In this context, the academic procrastination scale, academic grit scale and academic self-handicapping scale were applied to 512 high school students in Eskişehir. The correlational predictive model, one of the relational models, was used in the study. The study found that academic procrastination was positively correlated with academic self-handicapping and negatively correlated with academic grit. According to the other result obtained from the research, it was found that academic grit had a mediating role in the significant relationship between academic procrastination behaviors and academic self-handicapping behaviors. The results were discussed in light of the relevant literature and suggestions for future studies were presented.

Keywords: Academic procrastination, Academic self-handicapping, Academic grit, Adolescents.

Introduction

When individuals do not fulfill their responsibilities, they may experience tension and show procrastination behavior to get rid of these tension-producing situations (Güneş & Korkut-Owen, 2021). Academic procrastination behavior (APB), one of the types of procrastination, is defined as students' procrastination in academic tasks such as writing term papers and studying for exams (Prohaska, Morrill, Atilas, and Perez, 2000). The APB is not only a lack of work habits or time management but also a complex construct with cognitive, behavioral and affective dimensions (Solomon & Rothblum, 1984). Considering the studies on the factors that cause procrastination, procrastination is related to individuals' lack of skills such as time management, determining their priorities, and working efficiently and effectively, as well as personality traits and faulty cognitive attributions towards themselves and their environment (Balkıs, Duru, Buluş, & Duru, 2006).

When the literature is examined, it is seen that APB is associated with many different variables. APB was found to have negative and significant correlations with academic self-efficacy (Akbay & Gizir, 2010), academic motivation (Demir, 2017), academic success (Balkıs & Duru, 2010; Batoöl, 2020), time management (Sarıkaya - Aydın & Koçak, 2016), self-esteem (Aydoğan & Özbay, 2012; Senecal, Koestner, & Vallerand, 1995), responsibility towards self and others (Çelikkaleli & Akbay, 2013). On the other hand, APB was found to have positive and significant correlations with fear of failure (Zarrin, Gracia, and Paixão, 2020), hopelessness (Odacı & Kaya, 2019), stress (Eisenbeck, Carreno, & Uclés-Juárez, 2019), test anxiety (Saracaloğlu, Dinçer, and Saygı-Gekerer, 2018), neuroticism (Abood, Gazo, Alharbi, & Mhaidat, 2019). Considering the variables that APB is positively and negatively related to in the relevant literature, these relationships confirm that APB is an undesirable behavior for students. Another variable for which APB has been studied in the literature is academic self-handicapping (Azarbadkan & Ebrahimabad, 2018; Lee & Kim, 2016; Raoof, Ashkzari, & Naghsh, 2019).

In the context of academic learning, students sometimes experience threats to their self-confidence. These threats often appear in fear of failing in an upcoming situation, such as an important test (Schwinger, Wirthwein, Lemmer, & Steinmayr, 2014). Individuals who fail can externalize the source of their failure by attributing the causes of their failure to obstacles (Akça, 2012). In this case, academic self-handicapping behavior (ASHB), which is a specific type of self-handicapping behavior in the literature, may occur. According to Urđan and Midgley (2001) most of the research examining academic self-handicapping shows that academic self-handicapping is primarily

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a self-defeating behavior by students who still care about school but are low achievers and lack confidence in their academic abilities. In the literature, studies examine the relationship between ASHB and APB. Raof et al. (2019) found a significant and positive relationship between ASHB and APB in their study with high school students. Lee and Kim (2016) found that self-handicapping behavior was a significant predictor of APB. Azarbadkan and Ebrahimabad (2018) found in their study with male high school students that the most important predictor of APB was self-handicapping behavior. Considering the relevant literature, ASHB is also expected to predict APB in this study.

Mediator Role of Academic Grit

Grit was defined as perseverance and passion for long-term goals (Duckworth, Peterson, Matthews, & Kelly, 2007). Grit entails having a dominant superordinate goal and tenaciously working toward it in the face of obstacles and setbacks, often for years or decades (Duckworth and Gross, 2014). Considering the length of academic life in a certain period of human life and the goals desired to be achieved in this process, the importance of the concept of grit in academic life emerges. Clark and Malecki (2019) adapted Duckworth and Quinn's (2009) general definition of grit to the academic field. They made a definition for academic grit as follows: An individual characteristic or skill encompassing determination, resilience, and focus in the pursuit of challenging long-term goals within the domain of education. When the relevant literature was examined, it was found that academic grit was positively related to student's academic success (Clark, Dorio, Eldridge, Malecki, & Demaray, 2020), optimism (Bozgün & Başgöl, 2018) and self-efficacy (Alhadabi & Karpinski, 2020), while it was negatively related to stress (Lee, 2017) and test anxiety (Sturman & Zappala-Piemme, 2017).

Another variable negatively associated with academic grit is APB. Wolters and Hussain (2015) found in their study with college students that there was a significant, negative relationship between students' grit and procrastination behavior. In a similar study, Jin, Wang, and Lan (2019) found in their study with undergraduate students that there was a negative and significant relationship between students' grit and APB. At the same time, grit significantly mediated between APB and peer attachment. Regarding this situation, considering the definition of academic grit, academic grit includes focus, determination and resilience in the academic work/task that needs to be done (Clark & Malecki, 2019), while APB includes delaying the academic work/tasks that need to be done (Prohaska et al., 2000). Based on the results of the relevant research and definitions, it is thought that academic grit can also predict APB in this study in a negative and significant way.

Another variable in which academic grit is studied, albeit in small numbers, is ASHB. In the study conducted by Gitter (2008), it was found that there was a significant and negative relationship between ASHB and academic grit. While academic grit includes working with determination in the academic field in the long term despite obstacles (Clark & Malecki, 2019), ASHB includes externalizing failure by putting forward some barriers in the face of failure (Akça, 2012). Çelik and Sarıçam (2018) found in their study that students with academic internal locus of control had higher grit levels than students with an external locus of control. Another study found that external academic locus of control had a positive, moderately significant relationship with ASHB, and external academic control was the most significant predictor of ASHB (Akar, Çelik, & Karataş, 2019). When the characteristics of both concepts and the variables they are related to are considered, it can be said that the concepts contain features opposite features. In this context, it is thought that ASHB can predict academic grit negatively and significantly.

In general, students with academic self-handicapping behavior may increase academic procrastination when they have low academic grit. As mentioned in the related literature above, it can be said that academic grit may play a mediating role between APB and ASHB. In addition, no research has been found in the literature that combines academic grit, APB, and ASHB variables. In this context, the aim of this study is to examine the mediating role of academic grit in the relationship between APB and ASHB in adolescents.

Method

This section includes informations about the research model, sampling, data collection tools and the process.

Research Model

In this research, a correlational predictive model was applied. The study involving the predictive correlational model is used to account for the changes occurring on the dependent variable considering one or more independent variables (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2012). In this research, a correlational

predictive correlational model was implemented to examine the mediating role of academic grit in the relationship between APB and ASHB in adolescents.

Participants

The research participants consist of 512 students attending different types of high schools in Eskişehir province in the fall semester of the 2021-2022 academic year. 310 male and 202 female students have been involved in the research.

Data Collection Instruments

Academic Procrastination Scale (APS): APS was developed by Çakıcı (2003), to measure students' academic procrastination behavior. The scale consists of 19 items in a 5-point Likert type (1 = Does not reflect me at all - 5 = completely reflects me). While a minimum of 19 points can be obtained from the scale, a maximum of 95 can be obtained. As the scores obtained from the scale increase, academic procrastination behavior increases. Later, in the study conducted by Karadaş (2020), a confirmatory factor analysis of the academic procrastination scale was performed and fit values were obtained. The fit values are as follows: $\chi^2/sd=3.828$, IFI=.91, TLI=.90, RMSEA=.053. The Cronbach Alpha reliability coefficient of the scale was .92, and the test-retest correlation coefficient was found as .89 (Çakıcı, 2003). In this study, the Cronbach Alpha internal consistency coefficient was 0.766.

Academic Self-Handicapping Scale (ASHS): ASHS was developed by Urdan and Midgley (2001), and adapted into Turkish by Anlı, Taş, Güneş, Yazgı, and Sevinç (2018). The scale consists of 6 items in a 5-point Likert type (1 = Never - 5 = Always). While a minimum of 6 points can be obtained from the scale, a maximum of 30 can be obtained. As the scores obtained from the scale increase, academic self-handicapping also increases. Confirmatory factor analysis (CFA) results showed that the single factor structure was compatible with the original factor structure ($\chi^2/sd=1.12$, $p<.001$, CFI=.998, NFI=.975, RFI=.975, IFI=.998, TLI=.997, GFI=.992, AGFI=.981, RMR=.030, RMSEA=.018). The Cronbach's alpha internal consistency number of the scale was 0.81. In this study, the Cronbach Alpha internal consistency coefficient was found to be 0.776.

Academic Grit Scale (AGS): AGS was developed by Clark and Malecki (2019) and adapted into Turkish by Sağkal, Soyulu, Pamukçu, and Özdemir (2020). The scale consists of 10 items in a 5-point Likert type (1= Doesn't suit me at all - 5= Totally suits me). While a minimum of 10 points can be obtained from the scale, a maximum of 50 can be obtained. As the scores obtained from the scale increase, academic grit also increases. CFA results showed that the single factor structure was compatible with the original factor structure ($\chi^2(35)=131.624$, $p<.001$, $\chi^2/sd=3.76$, CFI=.97, TLI=.96, RMSEA=.07 CI [.06], .09]). The Cronbach Alpha reliability coefficient of the scale was .92, and the test-retest correlation coefficient was 0.90. In this study, the Cronbach Alpha internal consistency coefficient was found to be 0.897.

Data Collection and Analysis

Within the scope of the research, firstly, permission was obtained from the owners of the measurement tools used in the research. In the next step, ethical permission was obtained from the Selçuk University Faculty of Education Ethics Committee (E-16343714-900-127658) Then, permission was obtained from the Eskişehir Directorate of National Education, through the Rectorate of Selçuk University. Then, the high schools in Eskişehir were contacted, and the application was carried out in a virtual environment, considering the pandemic conditions. The research was carried out entirely voluntarily.

After the data were collected and entered into the SPSS program, missing data, wrong data entry, kurtosis, and skewness values were examined before the data were analyzed. First of all, normality assumptions for all models were examined for the data obtained. Mahalanobis distance values were checked for the multivariate normality assumption and 29 data were excluded from the data set because they were outliers. In addition, the kurtosis and skewness coefficients were examined to determine whether the univariate normality assumption was met. It is accepted that the +/- 2 values of kurtosis and skewness are acceptable values for the normal distribution (George & Mallery, 2010). In this study, the kurtosis values for all scales were between 0.045 and .715; the skewness values were between -.011- -.483, and all kurtosis and skewness values were found to be at an acceptable level. Pearson's correlation coefficients and Cronbach's alpha coefficients were calculated from the available data. Finally, Hayes's (2018) Model 4 was used to examine the mediating role of academic grit in the relationship between academic procrastination and academic self-handicapping.

Before the regression analysis, VIF values, Tolerance values (TV) and correlation coefficients between independent variables were calculated for some preconditions. For the regression model, the VIF value was 1-1.031, the TD was 0.970-1, and as seen in Table 1, the correlation between the independent variables was also found to be -0.173. The TV value should be greater than 0.2, the VIF value should be less than 10 (Field, 2005), and the correlation between the independent variables (predictors) should be below .80 (Büyüköztürk, 2010; Field, 2005). It was seen that they took the necessary values before the regression analysis and there was no multicollinearity problem.

Results

This section includes the mean, standard deviation, kurtosis and skewness values of the variables, correlation coefficients between the variables, and mediation analysis results.

Table 1. Mean, standard deviation, kurtosis, skewness, Pearson correlation coefficients for the variables

	M	SD	Skewness	Kurtosis	1.APB	2.AG	3.ASHB
1.APB	54.64	10.2	-.483	.715	1		
2.AG	33,3	7.6	-.011	.045	-.45**	1	
3.ASHB	15.4	4.7	-.056	-.328	.46**	-.173**	1

*p<.01, APB: Academic Procrastination Behaviour AG: Academic Grit ASHB: Academic Self-Handicapping Behaviour

As seen in Table 1, there was a positive, moderately significant relationship between APB and ASHB ($r=.46$, $p<.01$), while a negative, moderately significant relationship was found between AP and AG ($r=-.45$, $p<.01$). In addition, a negative, low-level significant relationship was found between AG and ASHB ($r=-.173$, $p<.01$).

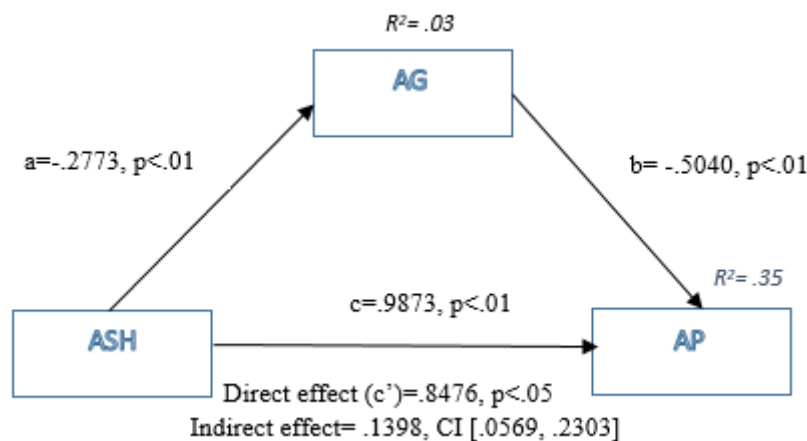
Table 2. Regression analysis results for mediation analysis (N=512)

Predictive Variables	Outcome Variables					
	M (AG)			Y (AP)		
		<i>b</i>	S.E.		S.E.	
X (ASH)	a	-.2773***	.0699	c'	.8476	.0770
M (AG)	-	-	-	b	-.5040***	.0481
Constant	\hat{I}_M	37.6067***	1,1277	\hat{I}_y	58.3738***	2.1836
		$R^2=.03$			$R^2=.35$	
		F (1; 510)= 15.7564; p<.001			F (2; 509)= 139.6612 ; p<.001	

*p<.05; **p<.01; ***p<.001, S.e.=Standart error, Non-standardized beta coefficients (b) were reported.

A regression analysis based on the bootstrap method was conducted to test the mediator role of academic grit in the relationship between academic procrastination and academic self-handicapping of adolescents attending high school. Hayes' (2018) model 4 was used for this analysis. In the analysis, 5000 resampling options were preferred with the bootstrap technique. The confidence intervals obtained by the bootstrap technique determined whether academic self-handicapping had an indirect effect on academic procrastination behaviors. The results obtained from the analyzes are given in Table 2 and Figure 1.

According to the results obtained from the analysis, academic self-handicapping was found to negatively and significantly predict academic grit ($b= -.2773$, %95 CI [-.4146, -.1401], $t=-3.9694$, $p<.001$). Academic self-handicapping also explained 3% ($R^2=.03$) of the variation in academic grit. Academic grit was also found to predict academic procrastination negatively and significantly ($b= -.5040$, %95 CI [-.5985, -.4096], $t= -10.4833$, $p<.001$). It was seen that the direct effect of academic self-handicapping on academic procrastination was positive and significant ($b= .8476$, %95 CI [.6963, .9989], $t= 11,0049$, $p<.001$). Regarding mediation, the indirect effect of academic self-handicapping on academic procrastination was significant; therefore, academic grit was found to mediate the relationship between academic self-handicapping and academic procrastination ($b= .1398$, %95 CI [.0569, .2303]). Academic self-handicapping and academic grit explained 35% ($R^2=.35$) of the variation in academic procrastination.



Note: Unstandardized values were reported

Discussion

In this study, besides examining the relationship between academic procrastination behaviors and academic self-handicapping behaviors of adolescents attending high schools, it was examined whether academic grit had a mediating role in this relationship. According to the results obtained, it was found that academic grit had a mediating role in the significant relationship between academic procrastination behaviors and academic self-handicapping behaviors.

According to the results obtained in the study, there was a negative and significant relationship between ASHB and AG, and it was also found that ASHB predicted AG negatively and significantly. In the study of Gitter (2008), which was one of the few studies in the literature to examine the association between ASHB and AG, a significant and negative relationship was identified, similar to the results of the present study. When the study's findings and the relevant literature are reviewed together, it can be concluded that ASHB is an impediment to the establishment of AG, which is an essential factor for students to take academic action. Another explanation for this situation is that individuals can focus on this situation cognitively due to the attempts to find a convincing causal explanation for the failures of individuals mentioned by Arkin and Baumgardner (1985). When this perspective is considered in the context of students, efforts to find excuses for students' failures instead of being determined to compensate for their failures may negatively affect students' academic grit.

According to the results obtained in the study, besides the significant negative relationship between AG and APB, it was also found that AG significantly predicted APB. Jin et al. (2019) found that AG predicted APB negatively and significantly in their study with Chinese university students. Another study conducted with nursing students in Egypt found that AG predicted APB negatively and significantly (Attia and Abdelwahid, 2020). Similarly, in the study conducted by Jeong (2020) with undergraduate students, it was found that AG predicted APB negatively and significantly. It is seen that the results of the studies in the literature related to the current study are similar. When the relevant literature and the results of the current study are considered together, it can be interpreted that adolescents' low level of grit while performing their academic work causes adolescents to disrupt their academic responsibilities.

According to the results obtained in the study, besides a significant positive relationship between ASHB and APB, it was found that AG had a mediating role in this significant relationship between ASHB and APB. According to these results, it can be stated that the ASHB of adolescents has a direct and significant effect on APB, and ASHB also has a significant indirect effect on APB through AG. There are studies in the literature showing that there are similar relationships. Jia, Wang, Xu, Lin, Zhang, and Jiang (2021) found a moderate, positive and significant relationship between ASHB and APB in their study with medical students. Beck, Koons, and Milgrim (2000) found a moderate, positive relationship between self-handicapping behavior and APB in their study with university students. Barutçu-Yıldırım and Demir (2020) found a moderate, positive relationship between self-handicapping behaviours and APB in their study with university students. In addition, there are studies examining the relationship between AG, the mediating variable of the research (Attia & Abdelwahid, 2020; Jeong, 2020; Jin et al. 2019), and the dependent variable, as well as studies examining the relationship between AG and the independent variable (Gitter, 2008). No study has been found in the literature that examines all three variables simultaneously or that examines AG as a mediator variable in the relationship between APD and ASHB. In this

context, it is thought that the results of this study can contribute to the literature. Taking into account the direct and indirect effects of the current study, it can be stated that as the ASHB of adolescents increases, their APB also increases directly, and as their ASHB increases, their AG decreases. It can be said that ASHB indirectly increases APB through its negative effect on AG. Regarding this situation, in this study, it was seen that ASHB has a role in academic procrastination behaviors, which are accepted as an important risk factor for adolescents' academic success. In addition to this role of ASHB, it can be said that ASHB is a risk factor for the emergence of AG, which has a supportive role in adolescents' academic success. In addition to the role of adolescents' ASHB on AP, it can be said that ASHB also indirectly plays a role in adolescents' postponement of their academic work by reducing their AG, which has an important role in starting and continuing their academic work.

Conclusion

In general, it was observed that ASHB had significant role in academic grit, which has an important place in starting and maintaining their academic work and in procrastination behaviors of adolescents attending high school while performing their academic career. Considering that ASHB increases adolescents' APB behaviors and decreases their AG, it can be said that ASHB is a significant risk factor for adolescents to fulfill and maintain their academic work. On the other hand, it can be said that AG has a supportive role in fulfilling academic tasks such as exams, homework, and study, as AG predicted APB negatively and significantly and had a negative and significant relationship with ASHB.

Recommendations

Taking into account the above results and the research, ASHB and APB behaviors, which make it hard for teens to do their schoolwork, can be reduced through individual or group counseling. In addition, it may be beneficial to include academic grit in the program while preparing psychoeducational studies on the reduction of ASHB and APB. Since this research is a quantitative study, cognitive risk factors and preventive factors underlying academic procrastination behaviors of adolescents can be examined in depth with qualitative studies in future studies. In the study, it was seen that the literature on academic grit and academic self-handicapping variables was less than the academic procrastination literature. In this context, in future studies, researchers can study the concepts of academic grit and self-handicapping with academic variables such as academic success, school adjustment, school burnout, dropout, as well as personality, family, and friends and technology use. In future studies, the variables in this research can be studied according to the grade level and the different types of high schools. Because the participants are from a single province, future studies with a broader participation can be conducted by including different provinces of Turkey. These findings are significant for parents, educators, school counselors, and policymakers alike.

Author (s) Contribution Rate

The article was written by a single author

Conflicts of Interest

The author declared there is no conflict of interest.

Ethical Approval

Ethical permission (E-16343714-900-127658) was obtained from Selcuk University Faculty of Education Ethics Committee for this research.

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