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The Role of Cognitive Distortions related Academic Achievement in Predicting the Depression, Stress and Anxiety Levels of Adolescents

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Abstract

The purpose of this study is to assess the predictive power of the cognitive distortions related to academic success concerning the depression, stress and anxiety levels of adolescents. The sample of research consists of 411 people; 192 (46,7 %) were female, 219 (53,3 %) were male, with 203 (49,4%) of the group continuing their education at academic high school whereas 208 (50,6 %) were vocational high school students. The study data was obtained by using the Personal Information Form, Depression, Anxiety and Stress Scale (DASS-42) – High School Form and Cognitive Distortions Scale related to Academic Achievement (CDS-AA). The t-test, ANOVA and simple linear regression analysis were used in analyzing the data. It was observed that cognitive distortions related to academic success, one of the research variables, did not differ according to gender, class level and receiving out-of-school academic support. On the other hand, it was seen that depression, anxiety and stress scores differed significantly in terms of gender, class level and receiving out-of-school academic support. Finally, it was observed that cognitive distortions related to academic achievement are a statistically significant predictor of depression, anxiety and stress.

Keywords: Adolescence, Cognitive Distortions Related to Academic Achievement, Depression, Anxiety, Stress

Introduction

Adolescence is a critical stage of development. Many changes occur in many ways, whether physically, emotionally, behaviorally, or intellectually, and when the adolescent tries to adapt to these changes. In this period, which is decisive for mental health, sometimes academic success expectations may come to the fore, and these demands may be far from functionality. Especially cognitive errors such as overestimating success, equation success with self-worth, and a low tolerance for failure may be related to adolescents' mental health. At this point, it can be said that the processes of the adolescent's interpretation are more important than the changes in the external world, such as increased exams and success expectations from the environment.

Adolescence is a period full of problems due to many different reasons such as the increase of sexual stimulation, fast growth, identity conflict and the ongoing dependence on the family (Çivilidağ, 2013). In addition, adolescents also need to cope with complex duties such as identity development, social development, academic success, preparing for their future profession or planning their future. The fact that the adolescence period also covers the university exam preparation period in Turkey makes this period extra critical, and the desire for academic success may come to the forefront (Çetin & Ceyhan, 2018). In fact, Andiç (2013) conducted a study on the issues that preoccupy adolescents and concluded that they are mainly concerned about issues such as their physical appearance, their relationships with family, peers or the opposite sex, as well as their future, education, exams and career opportunities. Accordingly, it can be said that adolescents focus mainly on academic issue.

Eskin, Ertekin, Harlak and Dereboy (2008) carried out a study with high school students as a result of which it was concluded that 18 % might be diagnosed with depression and that there is a statistically significant relationship between the academic success scores of adolescents and their depression levels. Serin and Topses (2017) have revealed as a result of their study that the psychological general symptoms index of students with low academic success was higher compared with students who have higher academic success. Other studies have reported that

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students who consider their school success as "bad" have higher mean depression scores (Anlayışlı & Serin, 2019; Türkleş, Hacıhasanoğlu & Çapar, 2008).

It is observed in the literature that cognitive distortions are related to academic success and the psychological characteristics of the individual (Savi-Cakar, 2014; Usen et al., 2016). It has been revealed that children under depression display more cognitive errors and make more negative references (Tems et al., 1993). Suadiye and Aydın (2009) have reported that children and adolescents diagnosed with anxiety have higher levels of catastrophizing and overgeneralization. Kapali et al. (2019) conducted a study in which they revealed that almost half of adolescents experience moderate academic stress and a quarter experience high academic stress, and that there is a statistically significant correlation between academic stress and academic achievement. It has been reported in another study carried out with adolescents that there is a negative and statistically significant relationship between depression and academic success (Khesht-Masjedi et al., 2019). It has been concluded in a study compiling the studies examining the relations between stress and academic success in Chinese children for the past 20 years that the majority of these studies have concluded a negative correlation between academic stress and academic success (Ye et al., 2019). Balkis, Duru and Bulus (2013) have found that rational academic beliefs directly impact academic procrastination and the time preferences for studying for exams and that they have an indirect impact on academic success. Whereas Atkinson (2011) conducted a study putting forth the presence of a statistically significant correlation between rational academic belief and writing anxiety. Balkis (2013) outlined in a previous study that rational beliefs have an intermediary impact on the relationships between academic procrastination, academic life satisfaction and academic success. Putwain, Connors and Symes (2010) illustrated in their study that cognitive distortions have a full intermediary impact between exam anxiety and academic success.

Different from previous studies, the present study has focused on the relations between the specific cognitive distortions of adolescents on academic success and their levels of depression, anxiety and stress. The cognitive theory asserts that anxiety and depression are sustained and strengthened through the cognitive distortions of individuals (Leahy, 2007). According to cognitive-behavioural approaches, distorted perception of reality, that is, cognitive distortions may lead to the onset of anger, depression and anxiety in children (Türkçapar et al., 1995). Cognitive-behavioural approaches deal with how individuals interpret the events they experience and identify and changend identify and change the errors that occur in the cognitive process during the interpretation phase (Stallard, 2002). It can be stated when the importance of childhood and adolescence in the personality development of individuals is taken into consideration that it is necessary to take into consideration unrealistic and dysfunctional ways of thinking at early periods (Çivitçi, 2006). This is also a development period during which delusionary and irrational thoughts emerge (Özbay, 2004). In the light of this information, it is of significant importance to focus on the dysfunctional thoughts of individuals in their adolescence. Information on the cognitive structure of adolescents can be obtained during this period, the possible cognitive faults can be determined and thus the probable emotional problems that may result from these cognitive faults can be prevented (Bilgin, 2004). Indeed, when studies on the problems of children and adolescents are taken into consideration, cognitive behavioral approaches are quite effective. In reviewing 16 meta-analyzes using cognitive behavioral applications, cognitive therapy was found to be a highly effective approach for treating adolescent depression, generalized anxiety disorder, social phobia, and post-traumatic stress disorder, as well as depression and anxiety disorders in children (Butler et al., 2006). Barrett et al. (2001) conducted a study that showed that 85.7% of children with anxiety disorders who were treated with cognitive-behavioral methods no longer showed anxiety symptoms approximately six years later.

Moreover, there are many psycho-education programs developed based on cognitive-behavioural approach and these programs strive to change the dysfunctional thoughts of adolescents and thus to prevent and decreasing their psychological problems (Türk, Buğa, Çekiç, & Hamamcı, 2018). This is because an adolescent's mental well-being directly affects whether he/she engages in risky behaviors (antisocial behavior, alcohol use, smoking, suicidal tendencies, eating habits, dropping out of school). The mental health disorder in adolescents leads to the appearance of various behavioral problems (Körük, 2016).

In conclusion, cognitive-behavioural therapies state that cognitive activities affect behaviors and the desired behavioral changes can be attained through cognitive change (Dobson & Dozois, 2010). Academic success is one of the most important topics in the lives of students and their families. It primarily holds an important place in the lives of many students at certain education levels where success is evaluated comparatively and thus the efforts spent to attain it increase together with the related anxieties (Kaya, 2018). In fact, in Turkey, 2,528,031 students applied for the higher education examination in 2019 and 904,176 of these candidates were granted the right to study (OSYM, 2019). Based on this data, it can be seen that young people face fierce competition in the transition to university and academic life. The analysis of the mental health problems and related factors is important both

for the planning and presentation of the psychosocial services to be provided to the above mentioned group of people (Eskin et al., 2008).

The present study focuses on academic success that stands out during adolescence for individuals along with their related cognitive distortions and the psychological problems of adolescents (depression, anxiety, stress). Hence, it can be stated that acquiring information during this study on the causes of mental problems will contribute to the prevention of these problems as well as the prevention of the secondary consequences of these mental problems. It can be pointed out that preserving the mental health of individuals should be one of the mutual concerns of both education and mental health workers with regard to the process of the adolescents in attaining their academic competencies.

Method

Study Group

The data of the present study were collected from two academic and one vocational education institution making up a total of three secondary schools (high school) institutions continuing their education at the central districts of the Gaziantep province. Data were acquired from a total of 425 people during the first stage however, 14 data were excluded due to data cleansing and outlier analyses. At the end of the data cleansing procedures, of the study group consisting of 411 people, 192 (46,7 %) were female, 219 (53,3 %) were male with 203(49,4%) of the group continuing their education at academic high school whereas 208 (50,6 %) were vocational high school students. The ages of the individuals in the study group varied between 14-18 (x=15,76; Ss= 1,14) with 110 (26,8 %) in the 9^{th} grade, 109 (26,5 %) in the 10^{th} grade, 108 (26,3 %) in the11^{th} grade and 84 (20,4 %) in the12^{th} grade. When the education of the parents of the individuals in the study group was examined, it was found that 32.1% of the mothers had a primary school degree, 28.5% had a secondary school degree, 25.1% had a university degree, and 12.4% had a university degree, while 17.8% of the fathers had a primary school degree, 25.5% had a secondary school degree, 28.2% had a university degree, and 27.3% had a university degree. In addition, 40 (9.7%) of the study participants considered themselves at a low economic level, 340 (82.7%) at a medium economic level, and 31 (7.5%) at a high economic level. 79 (19.2%) received supportive education outside of school, such as private tutoring, etudes, etc. 331 (80.5%) reported receiving no academic support.

Data Collection Tools

Personal information form: The demographic information of the participants, such as gender, age, school and family characteristics, and whether they received academic support outside of school, were collected with a form developed by the researchers.

Depression, Anxiety and Stress Scale (DASS-42) – High School Form: Developed by Lovibond and Lovibond (1995) and adapted into Turkish by Bilgel and Bayram (2010), the validity and reliability studies for the high school form of the scale were carried out by Akkuş-Çutuk and Kaya (2018). DASS-42 comprises 42 with 14 items measuring depression, 14 items measuring anxiety, and 14 items measuring stress. Each score obtained from the sub-dimensions of the scale scored as “Never (0), sometimes (1), frequently (2) and always (3)” shows the level of having the related problem. The lowest score that can be obtained from each sub-dimension of depression, anxiety and stress is 0, whereas the highest score is 42. The scale may include categorical scores if desired, with depression subdimension scores of 0-9 indicating a "normal" level of symptoms, scores of 10-13 indicating a "mild" level of symptoms, scores of 14-20 indicating a "moderate" level, scores of 21-27 indicating a "high" level, and scores of 28 and above indicating a "very high" level of depressive symptoms. In the anxiety subdimension: scores of 0-7 mean "normal", scores of 8-9 mean "mild", scores of 10-14 mean "moderate", scores of 15-19 mean "high" and scores of 20 and above mean "very high"; in the stress subdimension: scores of 0-14 mean "normal", scores of 15-18 mean "mild", scores of 19-25 mean "moderate", scores of 26-33 mean "high" and scores of 34 and above mean "very high" level of stress. As an example, Akkuş-Çutuk and Kaya (2018) conducted a confirmatory factor analysis on 913 high school students as a result of which it was determined that the chi-square value (x^2=3790.21,df=813, p=0.00) is statistically significant and that the fit indices were RMSEA=.063, CFI=.97, GFI=.83, IFI=.97, AGFI=.82, SRMR=.054.Cronbach’s Alfa values of .91 for the depression sub-dimension, .84 for the anxiety sub-dimension and .86 for the stress sub-dimension were obtained for the scale due to the analysis carried out within the scope of the reliability study. The CFA and Cronbach’s Alfa analyses performed within the scope of the present study show that DASS-42 is a valid and reliable tool for this study.

Table 1. The validity (DFA) and reliability (Cronbach's Alpha) analyses of DASS-42 within the scope of this study

Fit Indices	Values
X^2/ sd (2245,72 / 816)	2,75
RMSEA	.07
NNFI	.97
CFI	.97
GFI	.79
SRMR	.06
Cronbach's Alfa values	
Depression	.93
Anxiety	.84
Stress	.88

Cognitive Distortions Scale related to Academic Achievement (CDS-AA): The scale developed by Kaya (2018) for measuring the cognitive distortions of adolescents related to academic achievement has four sub-dimensions and 25 items. Data were collected from 606 high school students within the scope of exploratory, confirmatory factor analysis and reliability studies conducted during the scale development process. A four factor structure explaining 50.87 % of the variance was obtained due to the analyses conducted within the scope of exploratory factor analysis (EFA). Whether the obtained structure can be verified on a different study group was examined. It was determined following the confirmatory factor analysis (CFA) that the four-factor structure is confirmed with the data obtained from EFA (X^2/sd=2,29; RMSEA=.08; NNFI=.95; CFI=.95; SRMR=.08). Cronbach's Alfa (.89), test-retest reliability (.89) and structural reliability (.94) analyses were conducted within the scope of the reliability analyses for the scale and the results put forth that the tool has high reliability values. The 5-point Likert type scale has 4 sub-dimensions: catastrophizing, self-value, outer attribution, and perfectionism. Of these subdimensions, catastrophizing measures the excessive importance attributed to failure and the viewing of failure as a catastrophe, the self-worth subdimension measures the definition of personal worth through academic success, external attribution measures the attribution of success or failure to external factors, and perfectionism measures the rigid and high standards for success. The scale has a minimum score of 25 and a maximum score of 125, with the degree of cognitive bias increasing as the scoreincreases (Kaya, 2018).The CFA and Cronbach's Alfa analyses performed within the scope of the present study indicate that the CDS-AA is a valid and reliable tool for this study.

Table 2. The validity (CFA) and reliability (Cronbach's Alfa) analyses of CDS-AA within the scope of this study

Fit Indices	Values
X^2/ sd (1111.71 / 269)	4,13
RMSEA	.09
NNFI	.95
CFI	.96
GFI	.82
SRMR	.07
Cronbach's Alfa values	
CDS-AA	.93

Data Collection

The study data were collected in the fall semester 2021-2022, three high school institutions: vocational high schools and the other two were academic. High school placement scores were taken as reference criteria for academic high schools when determining the schools for data acquisition. One of the schools selected d high academic success and the other had moderate academic success. Whereas the criteria for the vocational high school displayed diversity concerning educational programs. Since one of the variables examined within the scope

of the study is cognitive distortions related to academic achievement, schools with academically different qualifications were preferred as much as possible in the selection of school type. Discussions were made with the psychological counsellors of the schools prior to data acquisition and the researcher went inside the classroom together with the psychological counsellors during the implementation period. The students were informed about the aim of the study prior to the implementation of the data acquisition tools and it was clearly stated that participation is solely based on the principle of voluntarism. The implementation of the data acquisition tools took about 20 minutes on average.

Data Analysis

Data cleansing was applied before passing onto the data analysis stage. In this scope, the data were excluded for five people who systematically selected the same choice or left more than one item blank. Mahalanobis distance values were taken as reference for examining the outliers in the data set. The data were excluded for nine individuals because they included outlier values. The data structure was examined during the second stage to determine the proper analyses for the data. In this scope, linearity and homoscedasticity analyses were conducted. Normality assumptions were examined by way of skewness and kurtosis values during the study and since it was observed that none of the values exceeded -1 and +1, it was concluded that the data do not have a normality problem(Leech et al., 2005:28). At the same time, linearity and homoscedasticity assumptions were examined via the residual scatterplot (Tabachnick & Fidell, 2014).It was concluded from all the analyses carried out that the data are suited for parametric measurements. In this scope, while independent samples t-test and ANOVA were conducted based on the differentiation of the variables subject to demographic characteristics, the correlation between dependent and independent variables was examined using Pearson Correlation. Finally, linear regression analysis was performed for examining the power of CDS-AA in predicting the variables of depression, anxiety and stress.

Findings

Since it was considered that the distribution of the variables subject to demographic characteristics would contribute to the study, the differentiation of CDS-AA and DASS-42 sub-scales subject to the primary demographic variables was presented prior to examining the relations between the variables.

Table 3. The t-test results for the level of differentiation of DASS-42 and CDS-AA by gender and whether or not to receive out-of-school academic support.

		N	**x**	**SS**	**sd**	**t**	**p**
Depression	Female	192	13,30	9,90	409	2,01	**.045***
	Male	219	11,38	9,40			
Anxiety	Female	192	10,65	6,91	409	2,48	**.01***
	Male	219	8,95	6,94			
Stress	Female	192	17,82	9,04	409	2,64	**.01***
	Male	219	15,57	8,28			
CDS-AA	Female	192	64,36	18,75	409	.82	.41
	Male	219	62,80	19,44			
Depression	Receiving support	79	15,98	10,90	408	3,90	**.00****
	No support	331	11,34	9,12			
Anxiety	Receiving support	79	12,76	8,32	408	4,35	**.00****
	No support	331	9,04	6,43			
Stress	Receiving support	79	19,90	8,62	408	3,48	**.00****
	No support	331	15,81	8,30			
CDS-AA	Receiving support	79	66,22	20,35	408	1,61	.13
	No support	331	62,77	18,79			

n= 411 ** p< .01 * p< .05

When Table 3 was examined, it was concluded that depression, anxiety, and stress scores based on gender are higher at a statistically significant level for women subject to receiving academic support (p< .05). On the other hand, it was observed that CDS-AA did not differ subject to gender and receiving academic support.

At the same time, the ANOVA test conducted for determining the state of differentiation of the variables at the ongoing class levels that CDS-AA does not differ with class level (p> .05) but that depression (p< .01), anxiety

(p< .01) and stress (p< .01) scores differ with the class variable. Tukey from among the Post-hoc tests was used for examining the source of the difference and it was determined that the difference is between the 9th and 10th grades and between the 11th and 12th grades, that the depression, anxiety, and stress score of 12th-grade students were higher at a statistically significant level compared with those of the 9th and 10th-grade students. Following the analysis of the study variables subject to demographic characteristics, Pearson correlation analysis was used for determining the correlation between the variables and the results were presented in Table 4.

Table 4. Mean, standard deviation, skewness/kurtosis and correlation values of research variables

Variables	1	2	3	4
1. CDS-AA	1			
2. Depression	49*	1		
3. Anxiety	45*	74*	1	
4. Stress	43*	73*	73*	1
X	63,53	12,28	9,75	16,62
Ss	19,12	9,67	6,97	8,71
Skewness	.40	.86	.89	.25
Kurtosis	-.27	-.03	.64	-.67

n= 411 * p< .001

As can be seen in Table 4, CDS-AA has a moderate and statistically significant correlation with depression (r=.49; p< .001), anxiety (r=.45; p< .001) and stress (r=.43; p< .001). After determining the correlations between the variables, simple linear regression analysis was carried out for determining the state of CDS-AA scores for predicting depression, anxiety and stress scores. The results of the analyses are presented in tables 5, 6 and 7.

Table 5. Simple linear regression analysis results on the prediction of depression by CDS-AA

Variables	B	SH_B	β	T	F	R	R^2	ΔR^2
Constant	-3,55	1,45		-2,46**	130,91	.49	.24	.24
CDS-AA	.25	.02	.49	11,44*				

n=411; *.01; ** .05

Table 6. Simple linear regression analysis results on the prediction of anxiety by CDS-AA

Variables	B	SH_B	β	T	F	R	R^2	ΔR^2
Constant	-.59	1,07		-.55	101.66	.45	.20	.20
CDS-AA	.16	.02	.45	10.08*				

n=411; *.01;

Table 7. Simple linear regression analysis results on the prediction of stress by CDS-AA

Variables	B	SH_B	β	T	F	R	R^2	ΔR^2
Constant	4,26	1,35		3,15*	91,35	.43	.18	.18
CDS-AA	.20	.02	.43	9,56*				

n=411; *.01;

It was observed when tables 5, 6 and 7 were examined that CDS-AA is a statistically significant predictor of depression (ΔR^2= .24; F_{Reg}= 130,91; p< .01) anxiety (ΔR^2= .20; F_{Reg}= 101,66; p< .01) and stress (ΔR^2= .18; F_{Reg}= 91,35; p< .01). Based on the regression equation set forth, the independent variable of CDS-AA explains 24 % of the variance observed in the depression score, 20 % of the variance observed in the anxiety score and 18 % of the variance observed in the stress score.

Conclusion, Discussion and Recommendations

One of the findings obtained from the present study was that women's depression, anxiety, and stress scores are higher at a statistically significant level than those of men. In examining the relevant literature, it was found that there are many studies that report that depression (Andiç, 2013; Boyd et al., 2000; Costello et al., 2003; Petersen

et al., 1993; Twenge & Nolen-Hoeksema, 2002 Wade et al, 2002), anxiety (Boyd et al., 2000; Lewinsohn et al., 1998; Körük, 2016; Yonkers et al., 2003) and general psychological symptoms (Costello et al., 2003; Karaman, 2018; Serin & Topses, 2017) are more prevalent in adolescents in females than in males. Higher levels of psychological symptoms, depression and anxiety in women can be related with biological, psychological and social reasons (Craske, 2003; Nolen-Hoeksema, 2002). At this point, it can be stated that the result of the present study is by the literature and that it may be beneficial for the effectiveness of mental health protection, prevention and intervention activities especially aimed at adolescents to keep in mind the knowledge that female students are under greater risk.

It was observed in the present study that there was no statistically significant difference in the differentiation subject to the gender of cognitive distortions related to academic success. While Çelikkaleli and Kaya (2016) state that cognitive distortions related relations do not differ subject to gender in university students, Karaman (2018) reported that the intensity of irrational beliefs with similar content to cognitive distortions does not does not differ subject to gender in adolescents. On the other hand, Balkıs and Duru, (2020) set forth that some of the irrational beliefs among depression symptoms differ subject to gender. In this scope, the present study's findings illustrate that female and male students have similar opinions on academic success.

When the depression, anxiety and stress scores of the study group were examined subject to receiving out-of-school academic support, the scores of those who are receiving support have significantly higher scores than those who do not receive out-of-school academic support. In addition, there are also studies that indicate that students receiving support in the form of private lessons and courses display higher academic success than their peers who do not (Başol & Zabun, 2014; Güvendir, 2014). This finding can be considered an indication that those who receive out-of-school academic support during adolescence have higher academic success and struggle with emotional difficulties. It can also be said that focusing on academic studies during adolescence, a time of searching for identity and independence, instead of focusing on sports, cultural and artistic activities that help them discover themselves, increases the likelihood of experiencing negative psychological problems such as depression, anxiety and stress. In this regard, it should be ensured that adolescents do not only lead lives focused on academic success and they should be guided by the family and the education system by their abilities and interests while also being encouraged to spare time for behavioral activities taking into consideration that they are in a period of personality acquisition. In addition, it seems important that institutions that provide academic support to students out of school should provide mental health support as well as success-oriented studies.

Cengiz (2017) conducted a study illustrating that the depression levels of students in the last year of high school were higher at a statistically significant level and that there were no statistically significant differences at the class level with regard toconcerning depression levels. . It was concluded that CDS-AA does not differ subject to class level. However, it was also observed that depression, anxiety and stress scores differ subject to the class variable. It was determined that the difference is between 9th and 10th grades as well as 11th and 12th grades and that tnd 11th and 12th grades. The depression, anxiety and stress scores of 12thgrades were higher at a statistically significant level compared withthan those of the 9th and 10th grades. Contrary to the findings of the present study, there are also other studies which indicate that class levels do not have an impact on the depression, anxiety levels of students (Kanlı, 2011; Türkleş, Hacıhasanoğlu, & Çapar, 2008). The higher levels of depression, anxiety, and stress among the 11th grade students in the present study can be explained by the fact that this is a particularly intense period in Turkey, characterised by the examination system and preparation for university exams, and that students cannot meet their personal needs (athletic, cultural, artistic, etc.) because they lead lives dominated by exam preparation. At this point, the fact that psychological symptoms increase at higher grades despite the lack of significant difference in the cognition levels subject to grade levels can be associated with the emergence of experiences (changes in the individual and social environment with the approaching of the higher education placement examinations). In this regard, focusing on 12^{th} grades in mental health intervention studies; in the protection and prevention studies, it can be said that it is necessary to focus on the 9^{th} and 10^{th} grades..

A moderate and statistically significant correlation was observed between CDS-AA and depression, anxiety and stress. This was the first study to determine the relations between academic success related to cognitive distortions and the variables of depression, anxiety, and stress. In this context, it is observed when a literature survey is made that previous studies have focused more on the relationships between general cognitive distortions, irrational beliefs or academic success and depression, anxiety and stress.

In reviewing studies that examined the relationship between academic success and adolescent mental health, it was found that there is a relationship between academic success and depression (Huang, 2015; McArdle et al., 2014; Sharma & Pandey, 2017; Zychinski & Polo, 2012) and that those who have high academic success (Anlayışlı & Serin, 2019; Eskin et al, 2008) and those who have higher perceptions (Bozkurt, 2004; Turkleş,

Hacıhasanoğlu & Çapar, 2008) have lower levels of depression. Moreover, it can be noted that there is a negative correlation between academic success and anxiety level (Khesht-Masjedi et al., 2019; Seipp, 1991; Sharma & Pandey, 2017) and there is also a negative correlation between academic success and test anxiety, which is a more specific form of anxiety (Steinmayr et al., 2016; Tugan, 2015).Moreover, it has also been determined that stress is a negative predictor of academic success for the majority of students (Liu & Lu, 2011) and that there is a negative correlation between academic success and stress (Ye et al., 2019). In this regard, it can finally be stated that there is a statistically significant and negative relationship between academic success and general mental health symptoms (Masten et al., 2005; Serin and Topses, 2017; Zhang et al., 2019). Moreover, it can also be indicated that there is a relationship between general cognitive distortions and academic success (Usen et al., 2016). Based on all these findings obtained from research studies, it can be concluded that the two variables of academic success and mental health are related, even though a causal relationship cannot be established between the two. The academic success of students was not measured directly within the scope of this study and instead, their expectations from and the meaning they attribute to academic success were examined as a result of which it was determined that similar to academic success, the variables as mentioned earlier are also related with mental health.

One of the primary research questions of the present study was identifying the level of prediction of cognitive distortions related with academic success concerning depression, anxiety and stress symptoms. The analyses carried out within the scope of this question put forth that CDS-AA predicts all three psychological symptoms at a statistically significant level. Cognitive-behavioral therapy, as one of the theories based on the assumption that there is a relationship between cognitions and mental health, assumes that cognitive biases (Beck, 1979; Beck, 2006) are related to psychological symptoms, whereas rational-emotional behavioral therapy assumes that irrational beliefs are related to psychological symptoms (Terán et al., 2020; Browne, Dowd, &Freeman, 2010).Various meta-analysis studies have also determined a correlation between irrational beliefs and psychological problems (Oltean & David, 2018; Vîslă et al., 2016). In addition, there are also studies which show that irrational beliefs are correlated with depression (Buschmann et al., 2018) stress (Yildiz et al., 2018) and anxiety(Çetin & Ceyhan, 2017). There are many studies reporting that cognitive distortions are related to depression (Marcotte, Lévesque & Fortin, 2006; Tairi, 2020; Usen et al., 2016), internalizing behavior problems (Leung & Wong, 1998), life events perceived as stressful (Deal & Williams, 1988; Dhanalakshmi, 2015), and anxiety (Tairi, 2020; Tekguel, 2015) in adolescents.On the other hand, meta-analysis studies put forth that CBT based intervention programs effectively affect the depression and anxiety levels of children and adolescents (Compton et al., 2004; Muñoz-Solomando et al., 2008; Reinecke et al., 1998). The finding of related literature indicating that the individuals' system of thinking is correlated with psychological symptoms and that thoughts are effective on mental health has also been supported with the present study results. This study has specifically focused on the cognitive attributes of adolescents based on the meaning ascribed to academic success which holds an important position in their lives. Study findings show that the mental health symptoms of high school students in Turkey are significantly affected from the cognitive distortions related with academic success. The fact that transition to higher education institutions in Turkey is mostly governed by central examinations. Students pass many assessments based on academic success when planning their future lives may have resulted in the high ratios of the variance explained by CDS-AA in the study. At this point, there is a possibility that different results may be obtained for education systems that are not central examination driven or that are not as success-centric. Based on these assessments, using CDS-AA for examining variables of students such as future expectations, academic procrastination, academic competence and levels of hope and carrying out similar studies in education systems or cultures that give less importance to success may contribute to a better understanding of the data acquired during the present study.

According to this result obtained for the main objective of the present study, it can be concluded that reducing cognitive biases related to academic success will have a preventive and protective effect on adolescent mental health. Indeed, cognitive behavioral approaches are concerned with how individuals interpret the events they experience and how they can determine and change the errors that occur during this interpretation phase in the cognitive process (Stallard, 2002:3). According to the results of the present study, it can be suggested to conduct individual or psychoeducational studies based on cognitive behavioral therapy (Butler et al., 2006), which is one of the most effective approaches for children and adolescents. In fact, there are many psychoeducation programs based on CBT that have been developed and aim to change the dysfunctional thoughts of adolescents and thus prevent and reduce their psychological problems (Turk, Buğa, Çekiç & Hamamcı, 2018).In addition, today, there are also many CBT based protective and preventive programs for protecting the mental health of individuals that have been developed not only based on traditional face-to-face methods but also on many other web-based interactive or computer-based technologies (Buğa & Hamamcı, 2020). In this context, it can be said that CBT-based studies are effective and one of the best methods that enables access to both children and adolescents. The findings of this study show that cognitive distortions related to academic achievement should be included in

mental health programs to be prepared for high school students. Lastly, considering that one of the sources of cognitive distortions related to academic achievement is parental attitudes (Kaya, 2020), it shows that parents' achievement expectations should be questioned to reduce adolescents' depression, anxiety, and stress levels.

Finally, the use of a simple linear regression rather than a multiple regression model to examine the effects of CDS-AA on depression, anxiety, and stress may be considered a limitation. However, at this point, we first attempted multiple regressions using the LISREL and AMOS software packages. Although the path coefficients in both software packages were statistically significant, the analyses were performed with simple regression because the goodness-of-fit index, indicating the agreement between the model and the data, was less than the acceptable limits.

Author (s) Contribution Rate

The authors contributed equally to the study

Conflicts of Interest

No potential conflict of interest was reported by the authors.

Ethical Approval (only for necessary papers)

Ethical permission (01.10.2021-93638) was obtained from Gaziantep University's Social and Humanities Sciences Ethics Committee for this research.

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