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The Mediating Role of Mindfulness in the Relationship between Psychological Resilience and Test Anxiety in Adolescents

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Abstract:

Introduction: The examination of variables such as resilience and mindfulness, which may help adolescents who are enrolled in distance education cope with test anxiety, is important in terms of reducing test anxiety and increasing the efficiency of distance education. For this reason, it was aimed to examine the mediating role of mindfulness in the relationship between students' psychological resilience and test anxiety.

Methods: The study group included 840 high school students. Baron and Kenny's causal steps approach was applied to investigate the mediating effect of conscious awareness on the relationship between psychological resilience and test anxiety. In addition, the bootstrapping method proposed by Hayes was used to determine the significance of the mediating effect of conscious awareness.

Results: It was observed that there was a negative relationship between psychological resilience scores and test anxiety scores, a positive relationship between resilience and mindfulness scores, and a negative relationship between test anxiety scores and mindfulness scores. While psychological resilience had a negative effect on test anxiety, the indirect effect of psychological resilience on test anxiety was also found to be significant. Mindfulness provided partial mediation of the effect of resilience on test anxiety.

Discussion: High levels of awareness and psychological resilience enable students to experience less stress. Conscious awareness, like psychological resilience, is therefore viewed as an important resource that enables a person to manage stressful situations, and it is believed to be effective in reducing one's anxiety.

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Limitations: This study was limited to students enrolled in Anatolian high schools in Turkey who could be reached via convenience sampling, whose parents consented to their participation, and who were enrolled in distance education in 2021 due to the COVID-19 pandemic. Thus, a major limitation of the study is that data were only collected from students of Anatolian high schools, and the majority of the participating students were in their first or second years of high school.
Conclusions: There is no prior direct research examining the mediating role of conscious awareness in the relationship between psychological resilience and test anxiety among high school students in the literature. In this regard, it is anticipated that this study will contribute to the literature. Within the scope of preventive guidance, educational guidance, and psychological counseling services, face-to-face and online psychoeducation programs based on conscious awareness can be designed by school psychological counselors to enhance psychological resilience, reduce students' test anxiety, and support adolescents in coping with intensely stressful situations such as pandemics.

Key words: test anxiety, psychological resilience, mindfulness, distance education, COVID-19.

Introduction

The COVID-19 pandemic is a global public health problem that has deeply affected the physical and mental health of the entire world (Duan & Zhu, 2020). While the pandemic has caused people to experience intense anxiety as a result of the uncertainty brought about by the disease, it has also prevented the continuation of the ordinary flow of life in many areas, especially education. With quarantine measures, schools were closed and distance education was introduced in many countries (Liu et al., 2020). The effects of the pandemic, quarantine measures, and the transition to distance learning led to an increase in student depression, anxiety, and mental illness (Xiang et al., 2020). Adolescence is a transition period that includes, under normal conditions, experiences of hormonal and developmental changes and processes of establishing one's identity (Crone & Dahl, 2012). Adolescents face emotional difficulties while undergoing developmental changes during this growth period. Therefore, it may be more challenging for adolescents to cope with pandemic quarantine measures and complications compared to their adult counterparts. While maintenance of routines is vital to adolescent mental health, the transition to distance learning has required new processes of adaptation. This has affected adolescent psychological health in many ways. Adolescents continuing their education online as a result of COVID-19 quarantine regulations experienced an increase in both test anxiety and general anxiety (Sakka et al., 2020). The literature confirms that psychologically resilient individuals are more successful in coping with challenging life events and have a better ability to protect themselves, both psychologically and physiologically, against stressful events (Bradshaw et al.,

2007). Therefore, psychological resilience is an important variable in reducing test anxiety among adolescents.

Psychological resilience is a dynamic process that can be defined as the ability to successfully adapt to traumas and difficulties (Norris et al., 2009). Psychological resilience makes it easier for a person to cope with difficult situations and adapt to the changes they experience. It also enables one to cope more easily with existing stress and to maintain performance via the development of a positive perspective; moreover, psychological resilience has a negative relationship with test anxiety (Totan et al., 2019). Studies have shown that as students' psychological resilience increases, their test anxiety decreases (Çakıroğlu et al., 2023). High academic performance protects an adolescent's psychological resilience; however, in turn, psychological resilience also allows for greater academic success (Gizir, 2007). During the COVID-19 pandemic, researchers found an increase in depressive symptoms and anxiety in the general population (Taylor et al., 2020). However, not everyone experiences fear and anxiety-inducing processes to the same extent, and a considerable proportion of people may show more psychological resilience in the face of adversity. While studying remotely, students' pandemic anxiety and psychological resilience are both reflected in their anxiety responses to online tests (Selçuk et al., 2021; Sheerin et al., 2018). Considering that students' psychological resilience levels affect their anxiety management processes (Bahmani et al., 2016; Çakıroğlu et al., 2023), psychological resilience may be a protective resource in coping with test anxiety; furthermore, examinations of this relationship may lead to new approaches to preventive and educational guidance (Alfoukha et al., 2019; Çakıroğlu et al., 2023).

Test anxiety entails the cognitive, affective, and behavioral reactions that arise as a result of one's fear of failure upon evaluation. It manifests itself by negatively affecting the student's learning processes before tests and performance during tests. Furthermore, test anxiety prevents students from making use of their full capacity (Gibson, 2014). Students often experience test anxiety as a result of a negative testing history, high environmental and familial expectations, the student's lack of adequate preparation for the test, insufficient self-confidence, or negative thoughts (Onyeizugbo, 2010). Since this anxiety may affect the current performance of the person even more negatively, it is important to examine the causes and solutions of test anxiety. Test anxiety negatively affects the academic, social, and emotional life of the student, and examining the variables that are effective in the relationship between test anxiety and psychological resilience is vital for effective preventive guidance services (Çakıroğlu et al., 2023; Totan et al., 2019).

To cope with anxiety, people can reassess their situations with mindfulness, realize their irrational beliefs and negative inner speeches, and objectively

reassess their situations. Mindfulness is the acceptance of negative life experiences and the awareness of those experiences without judgment. Mindfulness is a valuable resource in coping with stressful life events and strengthening one's psychological resilience (Lindsay & Creswell, 2017). Mindfulness, which includes non-judgmental acceptance of the present moment, allows people to focus their attention on the present moment, increases psychological resilience, and offers a source of distraction in anxiety-provoking situations (Verplanken & Fisher, 2014). With mindfulness, people become more conscious of their feelings, thoughts, and bodily sensations and can develop new perspectives towards them (Önder & Utkan, 2018). Mindfulness also enables people to focus their attention on specific situations and to realize the positive aspects of situations. Studies have shown that mindfulness is an important intervention tool for developing psychological resilience and reducing stress (Matiz et al., 2020). Mindfulness enables individuals to cope with stressful situations more easily; it also facilitates learning by increasing students' well-being, attention, and academic success. Therefore, mindfulness-based practices can be used to reduce test anxiety. Increased mindfulness can aid students in coping with the transition to remote learning, reduce test anxiety, and improve psychological health (Amundsen et al., 2020; Martarelli & Wolff, 2020). In the literature, studies show a positive relationship between well-being and mindfulness (Cash & Whittingham, 2010; Howell et al., 2010). Therefore, as a starting point of the present study, it was assumed that mindfulness and resilience together can reduce adolescents' test anxiety.

The main purpose of this study is to examine the mediating role of mindfulness in the relationship between psychological resilience and test anxiety among adolescents enrolled in high school and pursuing distance education during the COVID-19 pandemic. A previous study conducted with a group of undergraduate and graduate students found that mindfulness played a mediating role in the relationship between students' psychological resilience and test anxiety (Çakıroğlu et al., 2023). However, there have been no similar studies conducted with high school students. It is important to better understand students' physiological and emotional reactions to test anxiety in order to produce permanent solutions to those negative emotions. Therefore, to provide support for preventive and educational guidance activities, this study examines the psychological resilience, test anxiety, and mindfulness of adolescents participating in distance education. The aim of the study is to clarify the mediating role of mindfulness in the relationship between psychological resilience and test anxiety among adolescents pursuing distance education. The sub-objectives were as follows:

- Is there a relationship among adolescents' psychological resilience, test anxiety, and mindfulness?

- Does mindfulness have a mediating role in the relationship between adolescents' psychological resilience and test anxiety?

1 Method

1.1 Research model

The study was designed according to the structural equation model to examine the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety of distance learners. Structural equation modeling is a multivariate statistical technique developed to evaluate the fit of a model to the data, allowing causal effects between latent variables and observed variables to be examined (Stevens, 2009).

1.2 Study group

The study group consisted of high school students from various provinces of Turkey who were enrolled in distance education in Anatolian high schools due to COVID-19 in 2021. Anatolian high schools are public schools that generally admit students on the basis of high scores from the national high school entrance exam. The data collection tools described below were administered to 840 students who could be reached by the convenience sampling method, including 488 (58.1%) female students and 352 (41.9%) male students. While 446 (53.1%) of the students were in the first year of high school, 297 (35.4%) were in the second year of high school, 47 (5.6%) were in the third year, and 50 (6%) were in the fourth year.

1.3 Data collection tools

The Westside Test Anxiety Scale, which Totan and Yavuz (2009) adapted to Turkish, consists of a single dimension and eleven items. Confirmatory factor analysis (CFA) conducted to establish the construct validity confirmed the structure of the scale and the factor loadings ranged between .32 and .78. The reliability and validity study of the scale was conducted for high school students, and it was found to be valid and reliable. CFA was also applied to examine the construct validity of the Westside Test Anxiety Scale. When the fit values and modification indices were examined, the single-factor structure of the scale was confirmed and the model was significant [χ^2 (39) = 84.000; $p < .001$; χ^2 / df = 2.15; RMSEA= .04, IFI= .98; CFI= .97; GFI= .98; AGFI= .97; SRMR= .03]. CFA also showed that the factor loadings of the scale's items ranged between .38 and .64, and the path coefficients were significant ($p < .001$). The Cronbach alpha coefficient of the scale for the present study was .80.

The Brief Psychological Resilience Scale for Children and Adolescents was developed by Liebenberg et al. (2013) and adapted to Turkish by Arslan (2015) with a sample of high school students. The analysis confirmed the one-factor

structure of the scale and the Cronbach alpha value was .91. The modification indices were examined to improve the fit values obtained according to CFA and further confirm the construct validity of the scale. It was concluded that the single-factor structure of the scale was valid and the model was significant [χ^2 (48) = 103.488; p< .001; χ^2 / df = 2.16; RMSEA= .04; IFI= .96; CFI= .96; GFI= .98; AGFI= .97; SRMR= .03]. It was also concluded that the factor loadings of the scale's items ranged between .32 and .64, and the path coefficients were significant (p< .001). The Cronbach alpha coefficient of the Brief Psychological Resilience Scale for Children and Adolescents for the present study was .76.

The Child and Adolescent Mindfulness Measure developed by Greco et al. (2011) was adapted to Turkish for adolescents by Çıkrıkçı (2016) and the one-factor structure of the scale was confirmed. However, following exploratory factor analysis, two items were removed from the scale. The Cronbach alpha coefficient for the final version of the scale, containing eight items, was found to be .73. It was concluded that the scale was valid and reliable for adolescents in the Turkish context. All of the items of this scale are reverse-coded. CFA was applied to confirm the construct validity of the Child and Adolescent Mindfulness Measure; the factor loading cut-off point of the scale's items was found to be .32, and items with factor loadings of .32 and above were accepted as contributing more to the variance. The second item of the scale had a factor loading of .21; because that value was lower than .32, this item was excluded from the analysis. When the modification indices were examined to improve the fit values, it was clear that the single-factor structure of the scale was confirmed based on the correlation of the error values. The model was found to be significant, and according to the fit values, the single-factor structure of the Child and Adolescent Mindfulness Measure is generally highly compatible with the collected data [χ^2 (10) = 24.953, p< .01; χ^2 / df = 2.50; RMSEA= .04; IFI= .98; CFI= .98; GFI= .99; AGFI= .98; SRMR= .02]. The factor loadings of the scale's items were between .37 and .73 after the exclusion of the second item, and the path coefficients were significant (p< .001). The Cronbach alpha coefficient of the scale for the present study was .70.

1.4 Data analysis

Before the data were further analyzed, the kurtosis, skewness, Z-scores, and Mahalanobis distance were evaluated to confirm the suitability of the data for parametric tests. Twenty-five data points were excluded. Skewness values ranged from -.33 to .03 and kurtosis values ranged from -.48 to -.31. Since these values were between -2 and +2, it was concluded that the distribution was normal (George & Mallery, 2010). To apply the structural equation model, the normality condition must be satisfied, there must be no multicollinearity between variables, and the normality assumption for multiple regression must be met

(Kline, 2011). The variance inflation factors (VIFs) and tolerance values (TVs) of the variables in the model were analyzed to determine whether or not multicollinearity problems were present based on thresholds of VIF ≥ 10 and TV ≤ .10. The VIFs of the variables in this model were found to range from 1.04 to 1.16 while the TVs were between .86 and .97, indicating that there were no multicollinearity problems. To confirm the presence of multivariate normal distribution, the Mardia multivariate standardized kurtosis coefficient was calculated and the obtained value was lower than 8. This indicated that the data had a multivariate normal distribution (Kline, 2011). The standardized kurtosis value was -.19 and the assumption of normality for multiple regression was met.
Based on the theoretical background, the model was tested, the cause-and-effect relationships between variables were revealed through the paths created, and the significance of those paths was examined based on fit values (Kline, 2011). Specifically, in this study, chi-square (χ^2), χ^2/degrees of freedom (df), GFI, CFI, AGFI, IFI, SRMR, and RMSEA values were used as goodness-of-fit indices. The causal steps approach of Baron and Kenny (1986) was used to examine the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety. According to this approach, to confirm the existence of a mediating effect, the independent variable should influence both the mediating variable and the dependent variable. When the mediating variable is added to the analysis in the second step, full mediation can be assumed if there is a non-significant relationship between the independent variable and the dependent variable. If there is a decrease in the significance of the relationship between the independent variable and the dependent variable in this step, partial mediation can be assumed. In addition, the bootstrapping method proposed by Hayes was used to determine whether the mediating effect of mindfulness was significant as this method tests the significance of both direct and indirect effects (Preacher & Hayes, 2008). In this context, a new dataset is created by randomly selecting the "n" number of data obtained with the bootstrapping method, and new analyses are performed for the new dataset. In the present study, "n" was taken as 1000. The lower and upper limits of the confidence intervals of the bootstrap coefficient, calculated to determine the significance of the direct and indirect effects established in the model, should not include zero (Hayes, 2013). The AMOS 24.0 program was used for these analyses.

2 Findings

The results of the correlation analysis conducted to examine the relationships among psychological resilience, test anxiety, and mindfulness, constituting one of the sub-objectives of this study, are shown in Table 1 together with the descriptive statistics of the scale scores.

Table 1

Descriptive values of scale scores and Pearson correlation analysis results

	Variables	*n*	*Min.*	*Max.*	$\bar{x}$	*SD*	1.	2.	3.
1.	Psychological Resilience	840	14	55	31.9	.27	1.00		
2.	Test Anxiety	840	21	60	43.3	.27	-.17**	1.00	
3.	Mindfulness	840	2	32	16.9	.20	.13**	-.35**	1.00

**p< .01; n= 840

As can be seen in Table 1, the relationship between psychological resilience scores and test anxiety scores (r= -.17; p< .01) was weak and negative, the relationship between psychological resilience and mindfulness scores (r= .13; p< .01) was weak and positive, and the relationship between test anxiety scores and mindfulness scores (r= -.35; p< .01) was moderate and negative. Mediation analysis was then conducted in line with the second sub-objective of the study, and the structural equation model developed to determine the direct effect of psychological resilience on test anxiety was tested. The goodness-of-fit values of the model shown in Figure 1 are presented in Table 2.

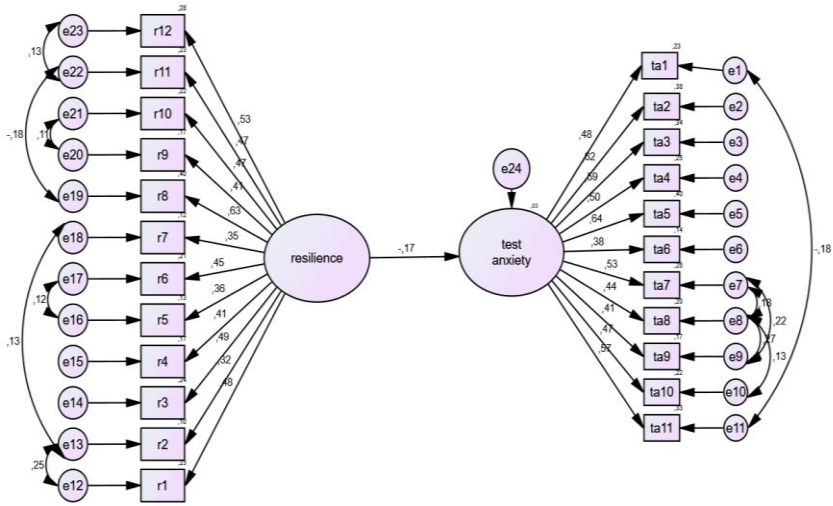

Figure 1. A structural equation model was developed to test the direct effect of psychological resilience on test anxiety.

Table 2

Fit values of the model developed to test the direct effect of psychological resilience on test anxiety

Criterion	*Good Fit*	*Acceptable Compliance*	*Calculated Values*	*References*
(χ^2 / SD)	≤ 3	≤ 4-5	1.92	Byrne, 1989
RMSEA	≤ .05	.06-.08	.03	Hu & Bentler, 1998
SRMR	≤ .05	.06-.08	.04	
CFI	≥ .95	.90-.94	.94	McDonald & Marsh, 1990
IFI	≥ .95	.90-.94	.94	Bollen, 1989
GFI	≥ .90	.89-.85	.96	Jöreskog & Sörbom, 1993
AGFI	≥ .90	.89-.80	.95	

When Table 2 is examined, it is seen that the model in Figure 1, developed to examine the direct effect of psychological resilience on test anxiety, fits the obtained data at an acceptable level. Psychological resilience had a negative effect on test anxiety (β= -.17; p< .001) and explained 3% of the variance in test anxiety. The results indicated that the first condition for confirming a mediating effect was satisfied. The goodness-of-fit values of the model in Figure 2, developed to examine the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety, are presented in Table 3.

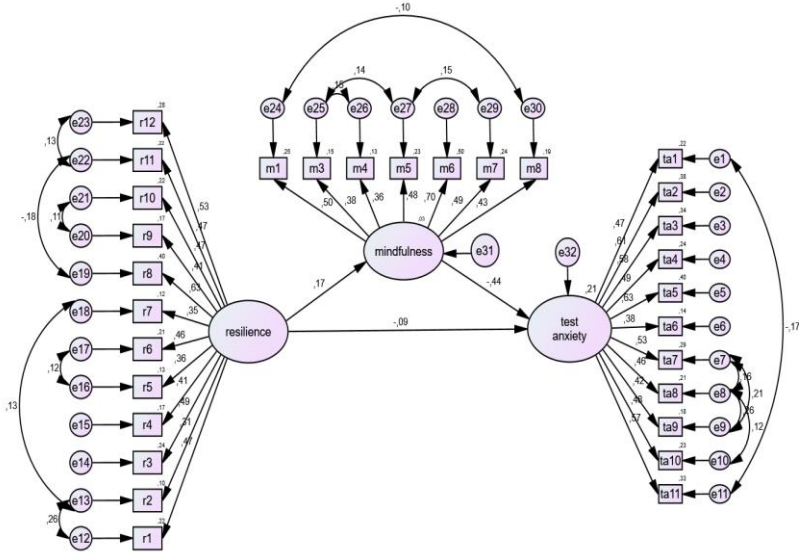

Figure 2. The structural equation model was developed to test the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety.

Table 3

Fit values of the model developed to test the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety

Criterion	*Good Fit*	*Acceptable Compliance*	*Calculated Values*
(χ^2 / SD)	≤ 3	≤ 4-5	2.02
RMSEA	≤ .05	.06-.08	.04
SRMR	≤ .05	.06-.08	.05
CFI	≥ .95	.90-.94	.91
IFI	≥ .95	.90-.94	.91
GFI	≥ .90	.89-.85	.94
AGFI	≥ .90	.89-.80	.93

When Table 3 is examined, it is seen that the model in Figure 2, developed to examine the mediating effect of mindfulness in the relationship between psychological resilience and test anxiety, fits the obtained data at an acceptable level. The indirect effect of psychological resilience on test anxiety was statistically significant (β= -.10; p< .05). This finding indicates that the second condition for confirming a mediating effect was satisfied. Mindfulness provided partial mediation in the effect of psychological resilience on test anxiety (β= -.07; p< .05), and psychological resilience and mindfulness explained 21% of the variance in test anxiety.

In order to provide additional evidence for the direct or indirect significance of the partial mediation model, the bootstrapping coefficient and the lower and upper limits of the 95% confidence intervals (CIs) were calculated according to the results of the bootstrapping process performed with 1000 samples. The results are shown in Table 4.

Table 4

Bootstrapping results for partial mediation model

		95% CI		
Model Pathways	*β*	*Lower Limit*	*Upper Limit*	*p*
Direct impact				
Psychological resilience-mindfulness	.17	.06	.28	***
ychological resilience-test anxiety	-.09	-.19	-.02	**
Mindfulness-test anxiety	-.44	-.54	-.34	***
Indirect impact				
Psychological resilience-mindfulness-test anxiety	-.07	-.13	-.03	**

*** *p*< .001 ***p*< .05

When the lower and upper limits of a CI do not contain zero, the examined effect is significant (Preacher & Hayes, 2008). Looking at Table 4, it can be concluded

that all of the effects in the model are significant. The bootstrapping confidence intervals of both the direct and the indirect effects do not include zero at the lower or upper limits (β= -.07; 95% CI: -.13 to -.03; p< .001). Therefore, based on bootstrapping analysis, it can be said that mindfulness has a partial mediating role in the relationship between students' psychological resilience and test anxiety.

3 Discussion

The main purpose of this study was to examine whether mindfulness had a mediating role in the relationship between the psychological resilience and test anxiety of adolescents enrolled in distance education during the COVID-19 pandemic. Researchers have found that, in stressful times, attending lessons and taking tests remotely constitutes a different experience for both students and teachers. According to several studies, some students who participated in distance education during the pandemic stated that they did not trust remote tests and they experienced various anxieties (Kürtüncü & Kurt, 2020; Sakka et al., 2020). A previous study examining the psychological impact of the pandemic on students found that stress negatively affected their well-being, but psychological resilience was a protective factor in overcoming learning difficulties (Quintiliani et al., 2021). Psychological resilience, which enables people to continue their work and overcome difficult life events, has a negative relationship with test anxiety (Totan et al., 2019). In the present study, psychological resilience was examined as one of the variables that aids in coping with test anxiety.

Psychological resilience helps people experience less anxiety and cope with the difficulties they face more easily. This study found a negative relationship between psychological resilience scores and test anxiety scores. Several previous studies support the results presented here, demonstrating that as students' psychological resilience increased, their test anxiety decreased (Çakıroğlu et al., 2023; Totan et al., 2019). One study found that test anxiety was significantly related to psychological resilience, and the authors recommended the development of resilience training programs to support students suffering from test anxiety (Liu et al., 2021). Another study, which found that students' positive psychological strength was an effective tool against test anxiety, emphasized that supporting psychological strength can be important in reducing anxiety (Khan et al., 2020).

Mindfulness and psychological resilience enable students to experience less stress. Therefore, mindfulness, like psychological resilience, is an important resource in stress management and is effective in reducing anxiety (Matiz et al., 2020). Studies have shown that individuals who develop mindfulness can control their emotions and thoughts more easily, react to stressful situations with more self-control, and improve their coping skills (Coholic, 2011; Palmer & Rodger,

2009). The results of the present study have confirmed the positive relationship between psychological resilience and mindfulness scores and the negative relationship between test anxiety scores and mindfulness scores. In addition, mindfulness provides partial mediation of the effect of psychological resilience on test anxiety. These results support the findings of other studies in the literature regarding the positive relationship between psychological resilience and mindfulness (Yavuz & Dilmaç, 2020). This study also confirms previous research demonstrating that as mindfulness increases, test anxiety decreases (Kielty et al., 2017).

According to the mediation analysis results of this study, psychological resilience and mindfulness explained 21% of the variance in test anxiety. Therefore, psychological resilience is effective in reducing students' test anxiety, and mindfulness is a mediator in this. The results obtained in a previous study conducted with undergraduate and graduate students support the present work, affirming that mindfulness had a mediating role in the relationship between students' psychological resilience and test anxiety (Çakıroğlu, 2023). Multiple studies have shown that increasing one's awareness of stressful situations aids in stress management (Falon et al., 2021). Similar to the results of the present study, research conducted by Reyes et al. (2015) revealed that psychological resilience acted as a protective factor in stressful situations, helping students achieve better academic results. Another study found that mindfulness contributed significantly to reducing students' test anxiety (Ross et al., 2020), while a study that applied various mindfulness interventions to reduce students' test anxiety found that students who used those techniques before a test were more successful. Group therapy for mindfulness-based stress reduction also reduced students' test anxiety (Mohammadi, 2018). In another study examining students' psychological resilience, mindfulness was found to be an important mediator in the relationship between cognitive appraisal and psychological resilience (Zarotti et al., 2020). Considering that tests are a constant reality of students' lives, appropriate interventions should be designed for students with test anxiety to support their academic and emotional development (Çakıroğlu et al., 2023; Mayer, 2008). Other than the present study, no research to date has directly examined the mediating role of mindfulness in the relationship between high school students' psychological resilience and test anxiety. In this respect, this study makes an important contribution to the literature and to the planning of preventive guidance activities.

However, this study has some limitations. The research was limited to students in Anatolian high schools who could be reached via convenience sampling during the COVID-19 pandemic in 2021. Furthermore, only students enrolled in distance education whose parents consented to their participation in the study were included, and a majority of the participants were students in the first or

second year of high school. The study is limited to the answers given by these specific students to the questions of the selected scales.

Conclusions and recommendations

Considering the benefits that distance education can provide in various areas, it is evident that it will continue becoming more and more common in modern life. Therefore, examining the effects of distance education on students from various perspectives is important both for preventive measures and for increasing efficiency in educational practices. Based on the results obtained in the present study, several recommendations can be made.

First of all, in the sphere of preventive guidance, educational guidance, and psychological counseling services, school counselors can prepare mindfulness-based face-to-face and online psychoeducation programs. Such programs would serve to increase psychological resilience, reduce students' test anxiety, and foster the ability of adolescents to cope with stressors such as the pandemic.

Preventive guidance activities can also be carried out for families by school counselors. These activities could focus on the importance of increasing psychological resilience and mindfulness to reduce adolescents' test anxiety.

School counselors can organize seminars for teachers on the importance of psychological resilience and mindfulness in reducing adolescents' test anxiety. Counselors can also guide teachers in arranging their lesson plans on the basis of mindfulness.

Improving the psychological resilience and mindfulness of high school students can play an effective role in reducing test anxiety. Directing students towards athletic or artistic activities that increase their psychological resilience may be beneficial in reducing test anxiety.

School counselors can identify students with test anxiety and provide mindfulness-based individual counseling services to improve their psychological resilience.

The relationships among psychological resilience, test anxiety, and mindfulness can be examined according to the variables of students at different education levels and in different educational environments.

Finally, the relationships among psychological resilience, test anxiety, and mindfulness in adolescents can be analyzed with qualitative methods based on the responses of students, teachers, and families, and different solution methods for reducing test anxiety can be discovered.

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