

# The mediating role of psychological resilience in the relationship between epidemic anxiety and academic motivation of physical education teacher candidates

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## Abstract

### Background and Study Aim

In addition to their physiological effects, epidemics negatively affect the motivation of individuals by causing varying levels of psychosocial problems such as stress, fear, anxiety and depression. At this point, psychological resilience is considered as an important variable in reducing and preventing the psychological effects of epidemic anxiety. The main purpose of this study is to examine the mediating role of psychological resilience in the relationship between epidemic anxiety of physical education teacher candidates and their academic motivation.

### Material and Methods

The study group of the research, which was designed in the relational screening model, consists of 451 physical education teacher candidates. They are studying in the 4th grade of the Physical Education and Sports Teaching program of the universities. The data of the research was collected with "Personal Information Form", "Epidemic Anxiety Scale", "Academic Motivation Scale" and "Brief Psychological Resilience Scale". Descriptive statistics techniques, correlation and regression analyzes were used to analyze the data. The PROCESS macro extension was used for mediation analysis.

### Results

The mean score levels of physical education teacher candidates were 57.03±14.52 for epidemic anxiety, 92.74±15.72 for academic motivation, and 20.26±5.00 for psychological resilience. While epidemic anxiety predicted psychological resilience (95%CI [-0.168; -0.109],  $p<.001$ ) negatively, psychological resilience predicted academic motivation positively in a significant way (95%CI [0.727; 1.331],  $p<0.01$ ). When psychological resilience was included in the model, the overall effect of epidemic anxiety on academic motivation (95%CI [-0.083; 0.123],  $p>0.05$ ) became insignificant. Psychological resilience has a mediating role in the relationship between epidemic anxiety and academic motivation.

### Conclusions

Psychological resilience emerged as an essential variable in preventing the psychological effects of physical education teacher candidates regarding epidemic anxiety and increasing their academic motivation.

### Keywords:

psychological resilience, motivation, epidemic anxiety, physical education, teacher candidate.

## Introduction

Epidemics that occurred during the historical process always negatively affected societies materially and morally. Lately, the Coronavirus (COVID-19) pandemic, which emerged in Wuhan, China in December-2019, caused a global-scale pandemic [1]. In addition to the physiological effects, pandemics creates psychosocial problems in individuals at varying levels, especially stress, fear, anxiety and depression [2, 3, 4]. Moreover, these psychosocial problems negatively affect the motivations of individuals, which form the basis of many behaviors in their lives. Because motivation is a complex and multidimensional psychological factor which includes needs, beliefs, goals, emotions and values [5, 6, 7]. Motivation in education is a driving force that initiates, directs, maintains and

terminates action towards the goals of individuals [8, 9] and is addressed as academic motivation [10, 11, 12]. Among the various theories developed about academic motivation, the most researched subject is the "Self-Determination Theory" developed by Deci and Ryan and it has three dimensions as Internal, External and amotivation, and the basic distinction is being made between Internal and External motivation. In theory, it is stated that three psychological needs are necessary, namely "competence", "relatedness" and "autonomy" and that motivation will increase if these psychological needs are satisfied [9, 13].

The negative emotional states that individuals have experienced together with epidemic anxiety adversely affect their academic motivations, which undoubtedly includes a psychological process. At this point, another psychological feature that is closely related to both epidemic anxiety and

academic motivation is “psychological resilience”. These characteristics, which help individuals to cope with the negative situations, have experienced more effectively and to be stronger in the face of these negative psychological factors, are defined as psychological resilience [14]. Originally derived from Latin roots “resiliens”, resilience is described as the ability to achieve positive and unexpected outcomes under difficult conditions and adapt well to extraordinary circumstances and situations [15, 16]. Because individuals who are psychologically resilient have the necessary skills and competencies that help them overcome adversities of life [17]. In summary, resilience refers to all of the psychological and behavioral abilities that enable individuals to stay calm in extraordinary situations such as crisis and chaos and to prevent negative consequences that they may face in the long run [18].

Studies have shown that individuals with a high level of resilience are more empathetic and has internal control, they are not intimidated in the face of stressful events on the contrary, they stand more strongly [19, 20, 21]. Studies also shows that psychological resilience can serve as a protective factor against psychiatric disorders caused by challenging adversities such as anxiety, depression and stress [22, 23, 24]. As such, resilience emerges as a fundamental variable in reducing and preventing the negative psychological effects of epidemic anxiety. From this point of view, the main aim of this study is to examine the mediating role of psychological resilience in the relationship between the epidemic anxiety and academic motivation of physical education.

## Materials and Methods

### Participants

The study group of the research consists of 451 volunteer physical education teacher candidates studying in the 4th grade of the Physical Education and Sports Teaching program of the universities in 2021-2022 spring term. The data of the research were collected online using GoogleDocs infrastructure. 206 (45.7%) of the physical teacher candidates

participating in the research were male, 245 (54.3%) were female, with a mean age of  $22.57 \pm 3.77$ .

### Ethical Approval

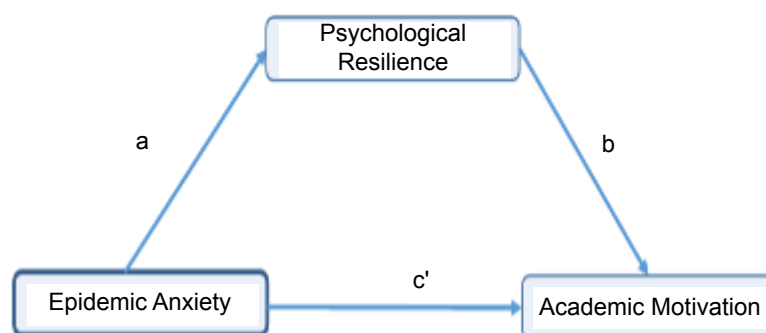
The necessary permission for the research was obtained from the Scientific Research and Publication Ethics Committee of Mardin Artuklu University with the decision dated 16.03.2022 and numbered 2022/3-18.

### Research Design

In this research, where the mediating role of psychological resilience in the relationship between epidemic anxiety states and academic motivations of physical education teacher candidates was examined, relational screening model was utilized. In the study, firstly, the relationship between epidemic anxiety and academic motivation was tried to be determined, and then it was investigated whether psychological resilience had a mediating effect on the relationship between these two variables. The model of the study is shown in Figure 1.

The data of the study were collected with the “Personal Information Form” with two questions (gender and age) created by the researcher, “Epidemic Anxiety Scale”, “Academic Motivation Scale” and “Brief Psychological Resilience Scale”. Information on the scales is given below.

**Epidemic Anxiety Scale (EAS):** The scale developed by Sayar et al [25] to measure epidemic disease anxiety consists of 4 sub-dimensions as “Epidemic, Economic, Quarantine and Social Life” and a total of 18 items. The items of the scale were rated as “1: Not suitable for me at all”, “2: Less suitable for me”, “3: Moderately suitable for me”, “4: Very suitable for me” and “5: Completely suitable for me” and were rated in five-point Likert type. The highest score that can be obtained from the entire scale is 90, and the lowest score is 18. The total score obtained from the scale was defined as “no anxiety” in the range of 18-32, “less anxious” in the range of 33-46, “moderately anxious” in the range of 47-61, “highly anxious” in the range of 62-75 and “very high anxious” in the range of 76-90. While the four-factor structure of the scale explained 65% of the total variance, the test-retest reliability coefficient



**Figure 1.** Study Model

was found to be .73, the Cronbach's alpha internal consistency coefficients of the sub-dimensions were between .77 and .89, and the total of the scale was .90. In the current study, the Cronbach's alpha internal consistency coefficients of the four-factor structure of the scale were calculated as between .82 and .86, and .89 for the total of the scale.

**Academic Motivation Scale (AMS):** The scale, which was developed by Vallerand et al [26] in Canada and adapted to Turkish by Karagüven [27] consists of seven different dimensions and 28 items in total, each of which consists of three "Internal Motivation", three "External Motivation" and one "Amotivation" dimension. The sub-dimensions are respectively; "Internal Motivation-Knowing (IMBI), Internal Motivation-Achievement (IMBA), Internal Motivation-Movement (IMH)", "External Motivation-Recognition (DMT), External Motivation-Self-Proof (DMKI), External Motivation-Regulation (DMD) and Amotivation (MS)" dimensions. The items of the scale were rated in a seven-point Likert type as (1-Strongly Disagree, 7-Strongly Agree). The scores obtained from the "Internal" and "External" motivation sub-dimensions of the scale range from 12 to 84, and the scores from the "Amotivation" sub-dimension range from 4 to 28. High scores from the sub-dimensions indicate that that dimension of motivation is high. As a result of the confirmatory factor analysis (CFA) applied on the seven-dimensional structure of the scale, the values related to the model-data fit (Goodness of Fit Index) were found as  $\chi^2/sd=3.09$ , GFI=.94, AGFI=.81, RMR=.06 and RMSEA=.07 within acceptable lower limits. In the original study of the AMS (Vallerand et al., 1992), the Cronbach alpha internal consistency coefficients of the sub-dimensions were found between .83 and .86, and in the Turkish adaptation it was found between .67 and .87. In the current study, the Cronbach's alpha internal consistency coefficients of the scale were calculated as between .81 and .89, and .86 for the total of the scale.

**Brief Psychological Resilience Scale (BPRS):** Developed by Smith et al. [28] in order to measure the psychological resilience levels of individuals, on the other hand, adapted into Turkish by Doğan [29] in a sample of university students in Turkey, after examining its validity and reliability, BPRS is a self-reported, 5-point Likert type (1: Not Suitable at all

-5: Completely Suitable) one-dimensional scale and consists of 6 items in total. High scores obtained after negative items in the scale were coded in reverse indicate a high level of psychological resilience. As a result of exploratory factor analysis (EFA), the single-factor structure of the scale explains 54% of the total variance, and the goodness of fit values obtained as a result of CFA were found within acceptable limits as such  $\chi^2/sd=1.83$ , GFI=.99, AGFI=.96, RMR=.03 and RMSEA=.05. While the Cronbach's alpha internal consistency coefficient of the scale was found to be .83, in the current study, the single-factor 6-item internal consistency coefficient of the scale was calculated as .75.

#### Statistical Analyses

The analysis of the data obtained from the research was carried out with the "IBM SPSS Statistics 22" package program. In the analysis, firstly, the skewness and kurtosis coefficients were examined in order to determine the conformity of the data to the normal distribution. Pearson Product Moments Correlation and regression analysis were used to determine the relationships and effects between variables. In the regression analysis, it was seen that there was no multicollinearity problem ( $VIF<10$ ) among the independent variables and there was no autocorrelation ( $DW=2.005$ ) between the error terms of the dependent variables. For mediation analysis, model 4 was utilized in the PROCESS macro extension based on Hayes' [30] Bootstrapping (5000 samples) approach.

#### Results

The descriptive statistics of the scores obtained from the epidemic anxiety, academic motivation and psychological resilience scales within the scope of the research and the results of the correlation analysis of the relations between the variables are presented in Table 1.

According to Table 1, the mean values of physical education teacher candidates' epidemic anxiety levels was  $57.03\pm14.52$ , the mean of academic motivation levels was  $92.74\pm15.72$ , and the mean of psychological resilience was  $20.26\pm5.00$ . Considering the lowest and highest score ranges that can be obtained from the scales; it can be said that the epidemic disease anxiety and academic motivation of the physical education teacher candidates were at a moderate level, and their psychological resilience

**Table 1.** Descriptive statistics and correlation analysis results

Variables	Mean	SD	Skewness	Kurtosis	1	2	3
1. Epidemic Anxiety	57.03	14.52	0.495	0.364	1		
2. Academic Motivation	92.74	15.72	0.122	-0.350	-0.114*	1	
3. Psychological Resilience	20.26	5.00	0.127	-0.434	-0.404**	0.320**	1

\*\*Correlation is significant at the 0.01 level (2-tailed); \*Correlation is significant at the 0.05 level (2-tailed).

levels were above the average. It was observed that the Skewness values of the scores obtained from the scales varied between 0.122 and 0.495, and the Kurtosis values between -0.434 and 0.364. Since the values are between  $\pm 1.5$  limits, it is accepted that the data show a normal distribution [31].

Again, when Table 1 is examined, there is a weak negative and significant correlations between epidemic anxiety and academic motivation ( $r = -0.114$ ;  $p < 0.05$ ), moderate negative correlations between epidemic anxiety and resilience ( $r = -0.404$ ;  $p < 0.01$ ), and moderate positive correlations between academic motivation and resilience ( $r = 0.320$ ;  $p < 0.01$ ). The results of the analysis carried out through the regression-based PROCESS application in order to test whether the psychological resilience of the physical education teacher candidates have a mediating role in the relationship between their anxiety about the epidemic and their academic motivations are presented in Table 2 and Figure 2.

When Figure 2 is examined, while epidemic anxiety predicted psychological resilience ( $B = -0.404$ , 95%CI [-0.168; -0.109],  $p < .01$ ) negatively, psychological resilience predicted academic motivation positively ( $B = 0.328$ , 95%CI [0.727; 1.331],  $p < .01$ ). When psychological resilience is included in the model; it is observed that the overall effect of epidemic anxiety on academic motivation ( $B = -0.124$ , 95%CI [-0.223; -0.024],  $p < .01$ ) decreased and became meaningless ( $B = 0.019$ , 95%CI [-0.083; 0.123],  $p > .05$ ). According to this result, psychological resilience played a full

mediating role in the relationship between epidemic anxiety and academic motivation. In addition, when the regression analysis results of the mediation model (Table 2) are examined; epidemic anxiety accounts for 16.3% ( $R^2 = 0.163$ ,  $F = 87.450$ ,  $p < .01$ ) of the change in the resilience of physical education teacher candidates, and resilience accounts for 32.1% ( $R^2 = 0.321$ ,  $F = 25.699$ ,  $p < .01$ ) of the change in academic motivation. The indirect effect of epidemic anxiety on academic motivation through resilience (Effect = -0.143, 95%CI [-0.222, -0.083]) is significant since the Bootstrapping confidence interval does not contain zero (0) [30].

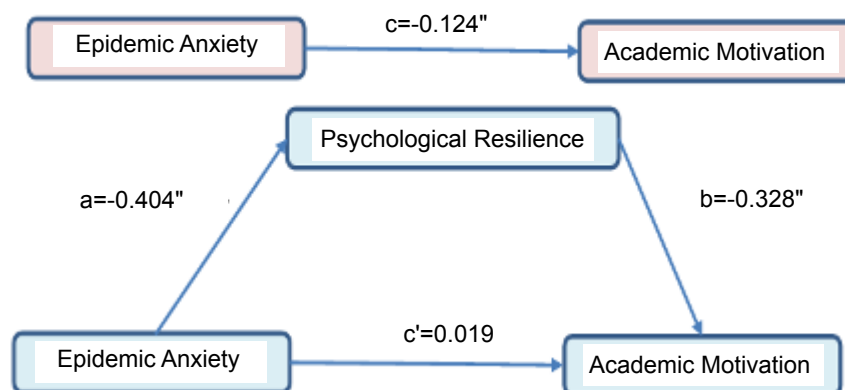
## Discussion

As a result of this research where the mediating role of psychological resilience in the relationship between the epidemic anxiety and academic motivation of physical education teacher candidates was investigated. It was determined that epidemic anxiety had a negative and significant effect on psychological resilience, while psychological resilience has a positive and significant effect on academic motivation. In the study, it was also found that the negative effect of epidemic anxiety on academic motivation was found to be insignificant when psychological resilience was included in the model. According to this result, the effect of epidemic anxiety on academic motivation is based on psychological resilience, and it was observed that resilience played a full mediating role at this

**Table 2.** Regression Analysis Results Regarding the Mediation Model

Variables	Psychological Resilience (M)				Academic Motivation (Y)				
		B	SE	p		B	SE	p	
Epidemic Anxiety (X)	a	-0.404	0.015	<.01	c'	0.019	0.053	.715	
Psychological Resilience (M)		-	-	-	b	0.328	0.154	<.01	
Constant	İM	28.204	0.876	<.01	İy	70.785	5.188	<.01	
		R2=0.163; F=87.450. p<.01				R2=0.321; F=25.699, p<.01			
Indirect Effect = -0.143; BootSE: 0.035; Bootstrapping 95% CI [-0.222; -0.083]									

Indirect Effect = -0.143; BootSE: 0.035; Bootstrapping 95% CI [-0.222; -0.083]



**Figure 2.** Diagram of the Mediation Model



point. It was seen that the academic motivations of physical education teacher candidates were partially affected by epidemic anxiety and more by their psychological resilience. In fact, these three concepts are psychometrically related to each other, but psychological resilience played a more dominant role in this relationship.

In the study, it was seen that the finding that epidemic anxiety negatively affected the psychological resilience of physical education teacher candidates was similar to the results of the research conducted in the field. In various publications investigating the psychological effects of epidemics on societies determined that psychological symptoms such as fear, anxiety and hopelessness were encountered more frequently, and that most of the individuals experienced the fear of contracting the disease, distress and grief together [32, 33]. Especially with the COVID-19 pandemic experienced all over the world, for children and adolescents to experience anxiety, panic and fear for themselves, their families, friends, loved ones and relatives was seen as a normal situation, and the level of anxiety and fear of individuals were increased [3,34,35]. As a matter of fact, studies show that the pandemic had negative psychological effects on many people, especially students, on a global scale and in varying sizes, like other previous epidemics [36, 37] and the psychological resilience levels of individuals decreased [38, 39, 40].

Data from the UK Office for National Statistics show that around 72% of people in the UK are concerned about the impact of COVID-19 on their lives, and many of them reported high levels of anxiety (32%) [41]. Ran et al. [42] in their research found that psychological resilience was negatively associated with symptoms of depression, anxiety, and somatization, and participants with higher psychological resilience were less likely to exhibit emotional problems. Davydov et al. [43] state that undesirable behaviors such as difficulty in solving problems or stress are associated with low psychological resilience. Öztürk [44], in thesis study in which he examined the relationship of fear of Covid-19 with anxiety and psychological resilience in adults, found that the fear of Covid-19 was significantly related to both the level of anxiety and the level of psychological resilience. Another result obtained from the study is that epidemic anxiety negatively affects the academic motivation of physical education teacher candidates. When

the literature is examined, similar results are observed. Araki [45] found that students' academic performance was negatively affected by the feeling of helplessness along with anxiety. Marler et al. [46] found that the psychological distress caused by the COVID-19 epidemic negatively affected the academic motivation of students with high academic performance.

The last result achieved from the study is that physical education teacher candidates' psychological resilience shows a full mediating role in the relationship between their anxiety about the epidemic and their academic motivation. Psychological resilience, a concept that is overemphasized, has started to be examined in connection with many risk factors and negative life events in childhood and adolescence [47]. Psychological resilience emerges as an important factor which successfully protects individuals from various risks in life [48]. While the adversities that individuals face in different periods of their education life cause academic exhaustion, their psychological resilience acts as an important barrier at this point [49, 50]. Studies have found positive relationships between focusing on academic goals, especially internal motivation and academic performance, and psychological resilience, and negative relationships between anxiety and stress [51, 52, 53], with the increase in psychological resilience the fear of Covid-19 decreases [54, 55, 56]. Resilience is a protective factor for anxiety and depression [57, 58, 59] and as students' levels of psychological resilience, positivity and hope increase, they will experience less emotional burnout, become less insensitive to their environment and feel less personal inadequacy [60].

## Conclusions

As in the current studies, in this study psychological resilience emerged as a basic variable to prevent the psychological effects of epidemic anxiety and to increase academic motivation. In order to obtain more in-depth findings, extensive qualitative research may be conducted in this area. Besides, it would be beneficial to conduct new research using different models with psychosomatic data obtained from clinical trials.

## Conflict of interest

The authors declare no conflict of interest.

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