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The Mediating Role of Coping with Stress in the Relationship Between Psychological Resilience and Cognitive Awareness in Undergraduate Students

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Abstract

Background: Psychological resilience and cognitive awareness are important in coping with stress.

Aim: This study examined the mediating role of coping with stress in the relationship between psychological resilience and cognitive awareness in undergraduate students.

Methods: This study employed a descriptive and correlational research design. The research involved 982 students from a university in Türkiye. Data were collected using a Descriptive Information Form, Brief Resilience Scale, Mindful Attention Awareness Scale, and Coping Style Scale between September and October 2021. The data were analyzed using descriptive statistics and by constructing a structural equation model using Analysis of Moment Structures (AMOS) Version 23 software.

Results: The study found that students' cognitive awareness and problem-oriented coping are positively correlated. Conversely, there was a negative correlation with styles of coping that involve emotional stress. It has been found that psychological resilience positively influences problem-oriented coping, which is a method of coping with stress, and has a direct negative effect on coping with emotions. Additionally, it was concluded that the hypothesis regarding the mediating role of coping with stress in the relationship between resilience and cognitive awareness is supported.

Conclusion: Universities should provide students with empowerment training programs or courses to help them build psychological resilience and cognitive awareness. Furthermore, mental health experts should offer students personal development seminars to emphasize the importance of psychological resilience and cognitive awareness.

Keywords: Coping styles, mindfulness, psychological, resilience, students

Introduction

People experience both adverse life events such as losses, fatal illnesses, natural disasters, and economic difficulties, as well as developmental crises like relocation, marriage, childbirth, and starting college,[1] and developmental crises (relocation, marriage, childbirth, starting college, etc.). Stressors affect one's adjustment either positively or negatively. While some individuals develop long-term psychiatric problems such as depression and anxiety due to these stressors, others quickly recover and restore mental balance.[2] Some people suffer from mental instability or mental problems. However, this tendency depends on their level of psychological resilience. One becomes stronger and discovers one's potential as one copes with stressors. This is associated with psychological resilience,[3] which is a multidimensional, dynamic, and improvable concept. People with psychological resilience are more likely to adapt to adverse life events.[4]

University life coincides with a critical developmental period. University students encounter numerous stressors.[5,6] For this reason, it is important to assess their level of psychological resilience[7] because university students meet peers with different cultural backgrounds and get to know themselves better in a new social and academic environment.[8] They also assume many new roles and responsibilities.[9] For example, they belong to certain groups, adapt to different schools, cities, and cultures, realize their plans, move away from their families, assert their individuality, and build identities. These new

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responsibilities cause most students to experience stress.[10] It was shown that university students face financial problems, experience disappointment, and suffer academic problems due to overcrowding. They cannot get used to the new social environment, dormitory life, and so on.[11,12] These problems indicate that we should focus on stress and psychological resilience among university students.[10]

Everyone copes with stress differently. Coping styles affect how people respond to perceived stressors. In their stress and coping theory, Lazarus et al[13] argue that cognitive appraisal and coping interact. According to them, problem-focused coping involves making decisions and taking action to manage or alter problems. On the other hand, emotion-focused coping involves controlling and regulating emotions by satisfying needs to reduce tension. Cognitive appraisal as a method of coping with stress is an essential component of cognitive mindfulness, which is defined as thinking about thinking and is also known as metacognition.[14] In other words, cognitive mindfulness is a form of self-awareness that reflects the way of learning and helps to be conscious. Cognitive mindfulness involves focusing, planning, evaluating, correcting, and organizing.[15] Therefore, it can be said that cognitive awareness is an important factor that affects how stress is managed. In this context, it will be possible to determine whether there is a relationship between coping with stress, psychological resilience, and cognitive awareness in university students and to create coping action plans according to the direction and severity of this relationship. Furthermore, the variables of coping with stress, psychological resilience, and cognitive awareness are significant concepts in the context of mental health. However, they are also regarded as crucial elements in the educational process and social lives of individuals.

To our knowledge, no research has ever investigated the mediating role of coping in the relationship between psychological resilience and cognitive mindfulness. This study investigated whether coping styles mediated the relationship between psychological resilience and cognitive mindfulness. Our results will contribute to the literature and allow authorities to develop psychoeducation programs to help university students build psychological resilience. The research questions are as follows:

1. Is there a relationship between psychological resilience, cognitive awareness and coping styles?
2. Is there coping styles mediate the relationship between psychological resilience and cognitive mindfulness?

Materials and Methods

Design

This descriptive and correlational study investigated whether coping styles mediated the relationship between psychological resilience and cognitive mindfulness. The study was conducted during the 2020-2021 academic year, between September and October 2021.

Study Setting

The study population comprised undergraduates from a state university in Central Anatolia, Türkiye. The university included 10 faculties, 5 institutes, 5 colleges, and 5 vocational schools.

Sample Size

The study population comprised 17724 university students enrolled at Çankırı Karatekin University during the fall 2021 semester. A power analysis was performed using G*Power to determine the sample size. The data showed that a sample of 982 was large enough to find significant differences (power 100%, explanatory coefficient 0.136, and error level 5%). The sample included 982 participants who met the inclusion criterion of having experienced at least one of the items in the Risk Factor Determination List.[16] The inclusion criteria for the study were (1) being an undergraduate student at the relevant university, (2) having experienced at least one of the items in the Risk Factor Determination List,[16] and (3) voluntary participation. All undergraduate students (from 1st-year to final-year) from all departments were eligible for the study. Additional criteria included (4) being able to read and understand Turkish and (5) being an active student at the time the research was conducted (Figure 1).

Data Collection Tools

Descriptive Information Form

The information form was developed based on a literature review and consists of 5 questions about students' age, gender, marital status, grade, and accommodation carried out by the researchers.

Brief Resilience Scale

The Brief Resilience Scale (BRS) was developed by Smith et al. in 2008[17] and adapted into Turkish by Doğan[2] in 2015. The instrument consists of six items rated on a five-point Likert-type scale: Strongly disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). Three items (2, 4, and 6) are reversed. The scale has no cut-off point. Higher scores indicate higher levels of psychological resilience. The Turkish version has a Cronbach's alpha ranging from 0.80 to 0.91 and test-retest reliability between 0.62 and 0.69. In this study, the scale has a Cronbach's alpha of 0.79.

Mindful Attention Awareness Scale

The Mindful Attention Awareness Scale (MAAS) was developed by Brown and Ryan in 2003[18] and adapted into Turkish by Özyeşil et al[19] in 2011. The instrument consists of 15 items rated on a six-point Likert-type scale (1 = almost always to 6 = almost never). The total achievable score on the scale ranges from 15 to 90 points. A high total score obtained with the test indicates a high level of mindfulness, while a low total score indicates a low level of mindfulness. The Turkish

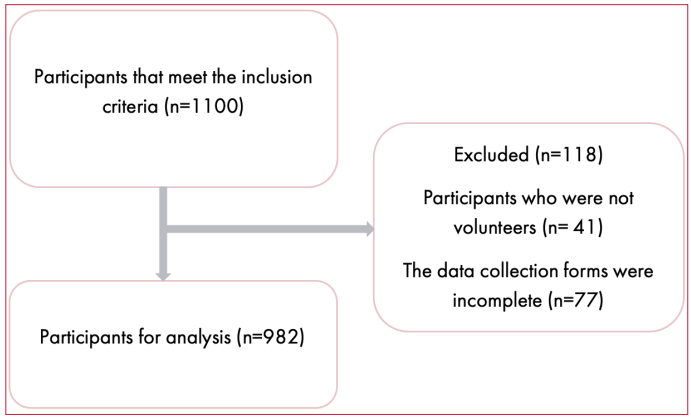

Figure 1. Study Sample Enrollment Diagram.

Table 1. Scale Scores and Cronbach's Alpha Values

Scales	Mean	Standard Deviation	Minimum	Maximum	Cronbach's Alpha
BRS	18.44	4.70	6	30	0.797
MAAS	57.27	11.56	15	115	0.792
CSS	76.87	9.12	43	120	0.704
Problem-focused	45.96	7.21	20	78	
Emotion-focused	30.93	7.10	14	56	

version has a Cronbach's alpha of 0.80 and test-retest reliability of 0.86. In the present study, the scale had a Cronbach's alpha of 0.79.

Coping Style Scale

This scale was developed by Folkman and Lazarus[20] in 1980, adapted into Turkish by Sahin et al[21] in 1992, and a shorter version, called the Coping Style Scale (CSS), was developed by Sahin et al[21] in 1995. The CSS comprises 30 items, with Items 1 and 9 being reverse scored. Subscale scores for "optimistic," "self-confident," and "seeking social support" indicate a higher likelihood of using active coping strategies. Higher scores on the helplessness and submission subscales indicate that people are more likely to use passive coping strategies. The total score of the subscale is divided by the number of items in the subscale, and subscale scores range from 0 to 3. High scores indicate that the individual is more likely to use that coping style. The total scale has a Cronbach's alpha of 0.76,[21] which was 0.70 in this study. In the current analysis, coping styles are considered to be either problem-focused/active or emotion-focused/passive approaches.

Data Collection

Data were collected by the researcher (H.Ö.) through face-to-face interactions with participants. All students were given a briefing on the purpose of the study, procedures, and confidentiality to ensure anonymity. The study was introduced to the students prior to their lesson. Subsequently, the forms were disseminated during recess once lessons had concluded. The completed form was submitted to the researcher by the students. Each respondent spent an average of 15 minutes filling in questionnaires.

Data Analysis

The statistical analysis of the data was conducted using the SPSS software package (version 22.0, IBM) at a significance level of 0.05. Descriptive statistics (mean, standard deviation, median, number, percentage, etc.) were used for analysis. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used for normality testing. A structural equation model (SEM) was constructed to assess the mediating role of coping mechanisms in correlating psychological resilience with cognitive mindfulness. The structural equation model was analyzed using the Analysis of Moment Structures (AMOS, IBM, version 23.0) at a significance level of 0.05. The application was carried out using a two-stage method in which the measurement and structural models were determined separately. A confirmatory modeling strategy was used to examine whether the theoretical model was confirmed. The data were analyzed in two phases. First, the data were organized before analysis. Important issues and SEM assumptions were reviewed before starting the analysis using SEM. Second, multivariate analysis was performed. The hypothetical model was analyzed using the data, and then the goodness of fit of the results was evaluated after parameter estimation.

Ethical Considerations

At the planning stage of the study, the researcher received permission from the authors who developed Turkish versions of the BRS, MAAS, and CSS that were used in the study via email. The study was approved by Çankırı Karatekin University Science, Mathematics and Social Sciences Ethics Committee (Approval Number: 19, Date: 24.11.2020). Permission was obtained from the university and from the Dean of Faculties. Authorization was granted by the authors who adapted the scales into Turkish. Throughout the research, the autonomy and consent of participants were respected. Participants were free to withdraw from the study at any time and for any reason. To prevent potential conflicts of interest, this investigation was undertaken by a postgraduate student (H.Ö.) who did not have direct contact with the students and served as the researcher for this study. This study was conducted in accordance with the Principles of the Declaration of Helsinki, and informed consent was obtained from the participants who volunteered to participate in the study, both in writing and verbally, before data collection. The consent was stated in the front section of the questionnaire form.

Table 2. Direct, Indirect, and Total Effects

	Direct Effect			Indirect Effect			Total Effect		
	BRS	Emotion-focused	Problem-focused	BRS	Emotion-focused	Problem-focused	BRS	Emotion-focused	Problem-focused
Emotion-focused	-0.635	0.000	0.000	0.000	0.000	0.000	-0.635	0.000	0.000
Problem-focused	0.680	0.000	0.000	0.000	0.000	0.000	0.680	0.000	0.000
MAAS	0.000	-0.476	0.283	0.495	0.000	0.000	0.495	-0.476	0.283

Table 3. Standardized Regression Weights

Dependent Variable		Independent Variable	Coefficient	Standard Error	Standardized Coefficient	t Statistics	Significance (P)
Problem-focused	<---	BRS	0.680	0.044	0.444	15.513	<0.001
Emotion-focused	<---	BRS	-0.635	0.044	-0.421	-14.528	<0.001
MAAS	<---	Problem-focused	0.283	0.048	0.177	5.845	<0.001
MAAS	<---	Emotion-focused	-0.476	0.049	-0.293	-9.685	<0.001

The regression analysis showed that all variables were statistically significant (P < 0.05).

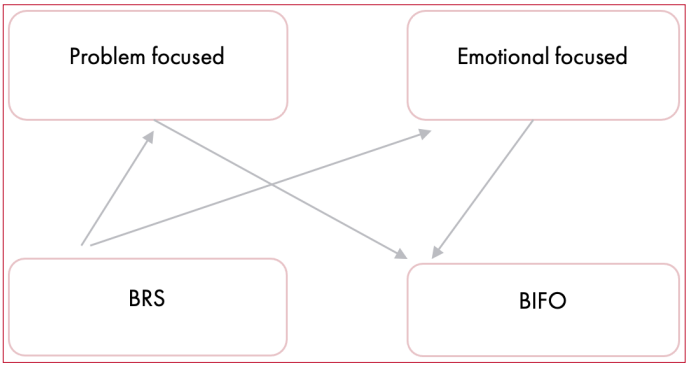

Figure 2. Path Analysis Model.

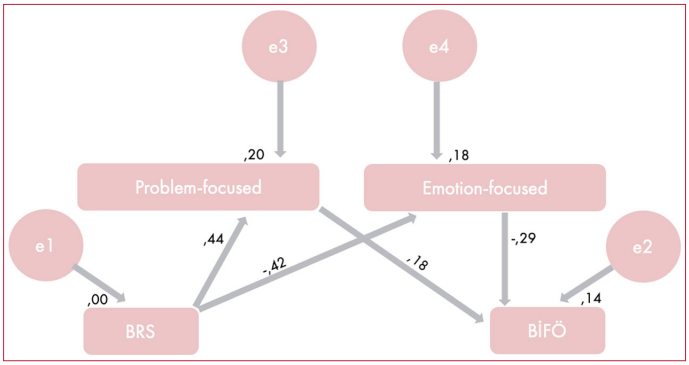

Figure 3. Estimated model and analysis results.

Results

When analyzing the descriptive data of the study, it was found that a significant majority of participants (72.4%) were female and most of them (54.48%) were second-year students. The mean age of the participants was 20.54 ± 1.58 years. It was observed that 74.95% of the participants stayed in dormitories at the university. The average scores were 18.44 (standard deviation [SD]: 4.70) for BRS, 57.27 (SD: 11.56), and 76.87 (SD: 9.12), respectively (Table 1).

After analyzing the fit indices of the established model (X^2=13.94, P < 0.001, Chi-square Minimum [CMIN]/degrees of freedom [df]=6.97, Goodness of Fit Index [GFI]=0.99, Adjusted Goodness of Fit Index [AGFI]=0.96, Comparative Fit Index [CFI]=0.97, Normed Fit Index [NFI]=0.97, and Root Mean Square Error of Approximation [RMSEA]=0.07), it was determined that the structural equation model demonstrated acceptable fit values. The direct effect of BRS on the emotional sub-dimension was calculated as -0.625, while the direct effect of BRS on the problem-oriented sub-dimension was calculated as 0.680. Based on these results, it can be posited that a high value indicates a strong relationship. In this study, the indirect effect between BRS and MAAS was 0.495. It can be observed that the values for the other variables are identical to the direct effect values (Table 2).

Regression coefficients were analyzed to determine how significantly the independent variables predicted the dependent variables. The model explained 13.6% of the MAAS score. The "emotion-focused" subscale (β=-0.293) had the most significant effect on the MAAS score. A one-unit increase in the BRS score led to a 0.680 unit increase in the "problem-focused" subscale score. A one-unit increase in the BRS score led to a 0.635 decrease in the "emotion-focused" subscale score. A one-unit increase in the "problem-focused" subscale score led to a 0.283 increase in the MAAS score. A one-unit increase in the "emotion-focused" subscale score led to a 0.476 decrease in the MAAS score. The regression analysis showed that all variables were statistically significant (P < 0.05). The fit indices were considered good indicators because they fulfilled the fit criteria. The estimation results of the theoretical BRS-CSS-MAAS structural equation model and the related fit statistics are presented in Table 3. The study question 1 for the BRS-CSS-MAAS model was rejected, and the data fit the model shown in Figure 2. The study question 2 was confirmed. The estimated model and analysis results are shown in Figure 3.

Cohen (1988) suggested that effect sizes be calculated to test the practical significance of values. This process involves calculating the standardized effect size (f^2) for regression analyses and calculating effect sizes for linear models. Accordingly, 0.02 ≤ f^2 < 0.15 indicates a small effect, 0.15 ≤ f^2 < 0.35 indicates a medium effect, and 0.35 ≤ f^2 indicates a large effect.[22] The effect sizes calculated for each variable

Table 4. Effect Sizes Calculated for Each Structural Equation

		Re^2	Ri^2-Re^2	(Ri^2-Re^2)/(1-Ri^2) Effect Sizes
Emotion-focused		0.106	0.03	0.035
Problem-focused		0.054	0.082	0.095
Ri^2	0.136			
1-Ri^2	0.864			

f^2: 0.153.

in the equation are shown in Table 4. The results showed that coping styles moderately mediated the relationship between psychological resilience and cognitive mindfulness.

Discussion

This study investigated whether coping styles mediated the relationship between psychological resilience and cognitive mindfulness. We developed a model to analyze the predictive relationship between coping styles, cognitive mindfulness, and psychological resilience. "Coping styles" were the mediator variables, "psychological resilience" was the independent variable, and cognitive mindfulness was the dependent variable. The analysis of variance results for the model showed that all parameters were statistically significant and indirectly predictive. The data fit the model. The results confirmed study question 1. In other words, the results showed that coping styles mediated the relationship between psychological resilience and cognitive mindfulness.

The steps suggested by Baron and Kenny (1986) were followed to analyze the model. The analysis pointed to two significant results. First, psychological resilience significantly affected both cognitive mindfulness and coping styles. Second, coping styles significantly affected cognitive mindfulness. According to Baron and Kenny (1986), when mediator variables are included in the analysis, the relationship between independent and dependent variables should either decrease or disappear altogether.[23] Our result showed that the significant relationship between psychological resilience and cognitive mindfulness decreased when coping styles were included in the analysis, suggesting that coping styles moderately mediated the relationship between psychological resilience and cognitive mindfulness. This result indicates that university students' coping styles explain the relationship between psychological resilience and cognitive mindfulness to some extent. The partial mediation model was analyzed according to the accepted fit indices.[24] The data for the structural equation model was found to be within the range of accepted fit indices, which confirmed the model.

This is the first study investigating the relationship between coping styles, psychological resilience, and cognitive mindfulness. The results showed that psychological resilience was positively correlated with problem-focused coping styles and negatively correlated with emotion-focused coping styles. All variables affected one another indirectly. These findings suggest that we need to determine university students' psychological resilience and provide empowerment training programs to help them develop effective coping styles to deal with stressors.[25] Research also shows that psychological resilience plays a crucial role in coping strategies.[26] Some people recover from stressful situations more quickly than others do. Psychological resilience is a dynamic process in which one adapts to an adverse event positively.[27] In fact, psychological resilience is considered to be a set of personal characteristics that facilitate one's ability to cope with stressful life events.[28] Based on the multidimensional nature of resilience, Connor and Davidson (2003) argue that people respond differently to stressors. Stressors allow people to mature and build resilience, which helps them adapt more quickly.[29] Research shows that psychological resilience protects us from stressors.[30,31] Dereceli[32] focused on psychological resilience and stress among sports science students and investigated the impact of perceived stress on psychological resilience during the Coronavirus Disease 2019 (COVID-19) pandemic. He concluded that we should avoid stressors to develop and maintain psychological resilience. Armata and Baldwin[33] reported a negative correlation between psychological resilience and stress among university students. Wu et al[34] focused on Chinese undergraduate students to determine the relationship between psychological resilience and coping styles. This study determined that high psychological resilience was associated with effective coping styles. Another study has also found a positive correlation between psychological resilience and coping styles.[35] Steinhardt and Dolbier[36] reported that students with high psychological resilience were better at recognizing the importance of coping styles and overcoming the adverse impact of negative emotions. Research shows that students with high psychological resilience are better at using problem-solving strategies and managing stressful events.[27,37]

Our results showed that cognitive mindfulness was positively correlated with problem-focused coping styles and negatively correlated with emotion-focused coping styles. Turan[38] also found that people with high cognitive mindfulness experienced fewer stress symptoms and enjoyed a higher quality of life and well-being. Nbina reported a significant association between cognitive mindfulness and coping styles.[39] People with high cognitive mindfulness are likely to have better mental and physical health, interpersonal relationships, and manage pain and stress more effectively.[40] Turan et al[41] pointed to a negative correlation between perceived stress and cognitive mindfulness levels. High cognitive mindfulness enables one to feel love, compassion, and forgiveness and indirectly helps one cope with stress.[42] Thus, one becomes empowered to cope with adverse situations.

The present study's results showed a positive relationship and an indirect effect between psychological resilience and cognitive mindfulness. One's ability to resist adverse life events and adapt to new circumstances may be related to what life means to one; the support from family members, friends, or a significant other, and variables in one's inner world. Psychological resilience, one's ability to overcome adverse situations and adapt to new circumstances, has been the subject of interest in many disciplines, such as psychology, psychiatry, sociology, genetics, and neuroscience. Cognitive mindfulness, which is used in the sense of learning to learn, involves focusing, planning, evaluating each stage of the learning process, and making corrections and adjustments.[15] Cognitive mindfulness is being motivated to learn a subject, focusing attention, and developing behavior towards this.[43] It is also defined as one's ability to find solutions by using learning and knowledge against challenges encountered in the learning process.[44] Research shows that psychological resilience and cognitive mindfulness positively relate to mental health. Possibly, high psychological resilience and mindfulness have a positive impact on one's life. Ruiz and Odriozola-Gonzalez argued a positive relationship between psychological resilience and cognitive mindfulness.[45] The higher the psychological resilience one has, the less likely one is to experience psychopathology.[46] De De Vibe et al[47] documented that people with cognitive mindfulness had a higher quality of life and fewer stress symptoms. In addition, Ateş and Sağar[48] also reported a positive correlation between cognitive mindfulness and self-efficacy.

Limitations

There were three limitations to this study. The first limitation is that the results are specific to the sample and cannot be generalized to all university students. Second, the results are limited to the qualities assessed by the scales. Third, we could not achieve homogeneity in terms of sociodemographic characteristics.

Conclusion

This study helps us better understand the coping styles university students use to deal with stressors. The results indicate that psychological resilience and cognitive mindfulness make university students more likely to adopt problem-focused coping styles. This study investigated whether coping styles mediated the relationship between psychological resilience and cognitive mindfulness. Future studies should focus on different independent variables to determine other factors that affect psychological resilience and cognitive mindfulness. The sample consisted of students only from one university. Therefore, researchers should recruit different samples and replicate this study for more generalizable results. In addition, the results of this study suggest that psychological resilience and cognitive mindfulness make university students more likely to use problem-focused coping styles to deal with stressors. Therefore, universities should provide students with empowerment training programs or courses to help them build psychological resilience and cognitive mindfulness. Moreover, mental health experts should offer students personal development seminars to help them recognize the importance of psychological resilience and cognitive mindfulness.

Ethics Committee Approval: Ethics committee approval was obtained from Çankırı Karatekin University Science, Mathematics and Social Sciences Ethics Committee (Approval Number: 19, Date: 24.11.2020).

Informed Consent: Written and verbal informed consent was obtained from the participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – H.Ö., S.T.K.; Design – H.Ö., S.T.K.; Supervision – S.T.K.; Resource – H.Ö., S.T.K.; Materials – H.Ö., S.T.K.; Data Collection and/or Processing – H.Ö.; Analysis and/or Interpretation – S.T.K.; Literature Review – H.Ö.; Writing – H.Ö.; Critical Review – S.T.K.

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