






ORIGINAL ARTICLE

## Mediators and predictors of peritraumatic dissociation after devastating consecutive earthquakes: the role of social support

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### Abstract

**Objective:** Dissociation involves the tendency to detach from one's environment, own body and mental states. This study aimed to evaluate the frequency of psychiatric symptoms, coping strategies with earthquake stress and the relationship between peritraumatic dissociation one month after two earthquakes that occurred 9 hours apart on 6th February 2023 in Türkiye.

**Methods:** In this cross-sectional study, an online questionnaire distributed through social media groups was filled by 786 university students studying in Adana, including Peritraumatic Dissociative Experiences Questionnaire (PDEQ), Coping Strategies with Earthquake Stress Scale, and Brief Symptom Inventory.

**Results:** The peritraumatic dissociation showed a weak negative relationship with religious coping strategy and a very weak positive relationship with seeking social support. Obsessive-compulsivity ( $\beta=0.650$ ), anxiety ( $\beta=0.572$ ), depression ( $\beta=-0.316$ , i.e., negatively), phobic anxiety ( $\beta=0.390$ ), positive symptom distress index ( $\beta=-1.888$ ), social support ( $\beta=0.597$ ) sub-dimensions were found to be important predictors of peritraumatic dissociation in the linear regression model (explanatory power  $R^2=0.379$ ) with obsessive-compulsivity (30.9%) being the most contributing factor. Peritraumatic dissociation scores were significantly higher in females and in those with damage or destruction in their homes. Mediation analysis revealed that depression indirectly increased the dissociation score, i.e., by decreasing the seeking social support scores, the latter being found to mediate peritraumatic dissociation.

**Conclusion:** The most important predictor of peritraumatic dissociation was obsessive-compulsivity symptoms, with the highest risk in those with more anxiety symptoms and who sought more social support. Therefore, social support is suggested to accompany early symptom screening after the earthquake to reduce outcomes like post-traumatic stress disorders.

**Keywords:** Earthquake, Post-Traumatic Stress Disorder, Peritraumatic Dissociative Experiences Questionnaire, Coping Strategies with Earthquake Stress Scale, Brief Symptom Inventory

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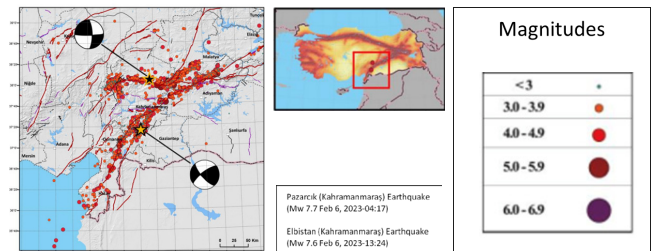
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## INTRODUCTION

While stress reactions after trauma are initially adaptive, in some people the psychological response may become negative with prolonged dysfunction. While most people with stress symptoms recover, it is important to recognise individuals at risk of persistent problems. Research in this area has generally focused on trauma based on personal relations or post-war issues, with very limited research on disasters triggered by natural hazards. Earthquakes cause widespread psychological consequences as well as physical and material damage. Earthquake-related psychological distress may occur following even a mild earthquake and may continue for years <sup>1</sup>. The most common psychological reactions to earthquakes are post-traumatic stress disorder (PTSD)<sup>2</sup> and other accompanying conditions including depression and anxiety <sup>3</sup>.

Personal characteristics are important in the development of PTSD; however, it has been shown that psychological distress such as dissociation, hyper-arousal and helplessness occurring after the earthquake also contribute to the development of this disorder <sup>4,5</sup>. One of the main features of PTSD is the phenomenon of dissociation associated with trauma. Dissociation includes the tendency to detach from one's environment, own body and mental states. Those with severe dissociative symptoms experience fragmentation in mental states such as consciousness, memory, identity, emotion, perception and body representations <sup>6</sup>. Dissociative reactions that occur especially during a traumatic event are called peritraumatic dissociation and include decreased awareness of the environment, memory disorders, altered perceptions, emotional numbness, depersonalisation

and amnesia <sup>7</sup>. Peritraumatic dissociation is the strongest predictor of PTSD <sup>8</sup>. The explanation for this is that dissociation occurring during a traumatic event may affect the encoding, processing and integration of traumatic memories and consequently may cause memory fragmentation, which plays an important role in the development of PTSD and dissociative disorders <sup>9</sup>. On 6 February 2023, Türkiye experienced two major consecutive earthquakes (with a magnitude of Mw 7.7 in Pazarcık and Mw 7.6 in Elbistan) and tens of thousands of aftershocks that caused destruction and damage in 10 provinces (Kahramanmaraş, Adana, Malatya, Hatay, Osmaniye, Gaziantep, Adıyaman, Diyarbakır, Kilis, Şanlıurfa) with a 9-hour interval, resulting in the death of approximately 51 thousand people. In Adana province, dozens of buildings collapsed and about 500 people died (Figure 1) <sup>10</sup>.



**Figure 1.** Pazarcık (Kahramanmaraş) Mw 7.7 and Elbistan (Kahramanmaraş) Mw 7.6 earthquakes and aftershock activities (Source: The Republic of Türkiye Presidency - Department of Strategy and Budget, 2023).

The aim of this study was to evaluate the relationship between the frequency of psychiatric symptoms, coping strategies with earthquake stress and peritraumatic dissociation among students studying at Cukurova University in Adana.

## METHODS

This cross-sectional study was conducted one month after the earthquake (in March) in Adana, one of the cities affected by the two

major consecutive earthquakes that occurred in Kahramanmaraş on 6 February 2023. Approval was received from the Cukurova University Faculty of Medicine Non-Invasive Clinical Research Ethics Committee (decision no: 39). The population of the study consisted of university students living in Adana. In the sample analysis, the minimum number to be reached was calculated as 135 based on a power of 99%, a confidence interval of 95%. (G\*Power 3.1.9.4., reference  $\beta=0.315$  and number of predictors=9) <sup>11</sup>. The individuals were reached through online social media groups (like WhatsApp, Microsoft Teams) by convenience sampling method. Responding was permitted for three days and resubmission was blocked. The research population consists of approximately 880 people studying in the 4th and 6th grades of the faculty of medicine. A total of 786 people gave consent to participate and responded to the questionnaire consisting of four sections:

### 1-Sociodemographic form

Age, sex, faculty attended, household of residence, being affected by the earthquake, loss of life, damage of buildings, physical injury, and previous earthquake experience were questioned.

### 2-Peritraumatic Dissociative Experiences Questionnaire (PDEQ) Scale

The PDEQ is a 10-question self-report scale that retrospectively measures dissociation during or immediately after trauma. The scale developed by Marmar et al. in 1997 is widely used to determine the degree of dissociation during trauma <sup>12</sup>. The Turkish validity and reliability evaluation of the scale was conducted by Geyran et al. in 2005. Each item is measured on a five-point Likert-type

scale between 0 (never) and 4 (always). It assesses dissociative symptoms including “confusion”, “depersonalisation”, “impaired perception of reality”, “impaired temporal perception” and “out-of-body affect”. The internal consistency coefficient Cronbach- $\alpha$  of the scale was calculated as 0.853. High scores obtained from the scale reflect a high level of dissociation during trauma <sup>13</sup>.

### 3-Coping Strategies with Earthquake Stress (CSES) Scale

The scale was developed and its Turkish validity and reliability study was conducted by Yöndem and Eren in 2016. It includes three sub-dimensions “religious coping”, “positive reappraisal” and “seeking social support”, which are most frequently used in the face of earthquake stress. The first one “*Positive Reappraisal*” aims to determine if the individual tries to build up coping strategies like being optimistic, thinking positively, not magnifying negativities, accepting what was lived as an experience, and giving himself/herself time for thinking about the future. The strategies examined in the “*Seeking Social Support*” sub-dimension include sharing the experiences, feelings and/or fears with friends or someone who can cope better with the problem. The sub-dimension “*Religious Coping*” include strategies like entrusting him/herself to God, relaxing in prayer, believing that destiny cannot be changed and fulfilling religious duties more faithfully. Each item is scored between 1 and 4 points. Scores between 5-20 points are obtained from the sub-dimension evaluating religious coping, 6-20 points from the sub-dimension questioning positive reappraisal, and 5-20 points from the sub-dimension evaluating seeking social support. Higher scores reflect

more appeal to the coping strategy in question. In the validity and reliability study of the scale, the internal consistency coefficient Cronbach- $\alpha$  was found to be 0.85 for religious coping, 0.69 for positive reappraisal and 0.74 for seeking social support <sup>14</sup>.

#### 4-Brief symptom inventory (BSI)

Brief Symptom Inventory is a self-report inventory developed by Derogatis (1992) in response to the need for a short but valid and reliable scale to assess general psychopathology <sup>15</sup>. The scale was adapted for Türkiye by Şahin et al. <sup>16</sup>. BSI is the short form of SCL-90-R. It is a multidimensional symptom screening scale developed to capture some psychological symptoms that may occur in various psychiatric and medical patients as well as in normal individuals. The BSI consists of 9 subscales (Somatisation, Obsessive-Compulsivity, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism). In addition to the nine subscales, three global indices assess general psychological distress. These include General Severity Index (GSI), Positive Symptom Total (PST), and Positive Symptom Distress Index (PSDI). There are additional items like eating and drinking disorders, sleep disorders, thoughts about death and dying, and feelings of guilt. The BSI is a Likert-type scale. The participants are asked to rate each of the 53 items on a 5-point Likert scale of distress ranging from "not at all (0)" to "extremely (4)" considering the relevance of each item to their experience in the past seven days including today. The higher the total scores obtained from the scale, the higher the mental symptoms of the individual. An individual can get a maximum of 4 points and a minimum of 0 points in each

subscale, additional items and two of three global indices (i.e. GSI and PSDI), while in the PST the maximum score can be 53 and the minimum score 0. An increase in the GSI, which represents the overall mean score of the scale, indicates an increase in distress due to psychiatric symptoms of the individual and is the best index of the scale. The PST increase shows how various psychiatric symptoms the individual perceives in himself/herself. The increase in the PSDI indicates the weighted average of the distress of the symptoms that the individual perceives to be present in himself/herself. The three global indices of the scale are calculated as follows:

*-General Severity Index (GSI):* It is obtained by dividing the sum of the subscales by 53.

*-Positive Symptom Total (PST):* First all items that are not marked as 0 (zero) are re-coded as 1 (one) and their sum gives PST.

*-Positive Symptom Distress Index (PSDI):* It is obtained by dividing the sum of subscales by the sum of symptoms.

#### Statistical analysis

The data were analysed with SPSS 20 ® (IBM-U.S.A.) software. Qualitative data were presented as frequency and percentage; while quantitative data as arithmetic mean, standard deviation, and median. Kolmogorov-Smirnov Test was used to test the normality. In the analyses Student's t-test, Mann Whitney U test, Spearman correlation analysis, Kruskal Wallis test, and multiple linear regression analysis were used. A  $< 0.05$  value was considered statistically significant. The effect size was evaluated using Rank Biserical Correlation coefficient (with 0.10 indicating a small, 0.30 a medium, and 0.50 or greater a large effect size) and eta-squared values (with



0.01 indicating a small, 0.06 a medium, and 0.14 or greater a large effect size).

## RESULTS

The mean age of 786 university students included in our study was  $20.36 \pm 2.70$  years (min=18-max=55). The most frequently observed psychiatric symptoms in the

participants were eating and drinking disorders, sleep disorders, thoughts about death and dying, feelings of guilt (86.9%), anxiety (85.8%), interpersonal sensitivity (82.6%) and obsessive-compulsivity (82.4%). The sociodemographic characteristics of the individuals and information about earthquake effects were given in Table 1.

**Table 1.** Distribution of sociodemographic characteristics and psychiatric symptoms among participating university students

Features	n	%
Gender Male/Female	223/563	28.4/71.6
Age (mean $\pm$ SD)	20.36 $\pm$ 2.0	
Family living in one of the 10 provinces affected by the earthquake (yes/no)	675/111	85.9/14.1
Loss of a relative in the earthquake (yes/no)	0/786	0/100
Receiving a physical injury in the earthquake (yes/no)	13/773	1.7/98.3
Have experienced a destructive earthquake (6.0 and above) before (yes/no)	112 /674	14.2/85.8
BSI-Phobic anxiety (present/absent)	632/154	80.4/19.6
BSI-Psychoticism (present/absent)	615/171	78.2/21.8
BSI-Anxiety (present/absent)	674/112	85.8/14.2
BSI-Obsessive-compulsivity (present/absent)	648/138	82.4/17.6
BSI-Somatisation (present/absent)	598/188	76.1/23.9
BSI-Interpersonal sensitivity (present/absent)	649/137	82.6/17.4
BSI-Depression (present/absent)	702/84	82.3/10.7
BSI-Hostility (present/absent)	647/139	82.3/17.7
BSI-Paranoid ideation (present/absent)	599/187	76.2/23.8
BSI-Additional items (present/absent)	683/103	86.9/13.1
BSI-General severity index (GSI) (high/low)	470/316	59.8/40.2
BSI-Positive symptom total (PST) (high/low)	465/321	59.2/40.8
BSI-Positive symptom distress index (PSDI) (high/low)	462/286	61.8/38.2
<b>Total</b>	<b>786</b>	<b>100.0</b>

BSI= Brief symptom inventory

When the correlations between the scores obtained from scales were examined, it was found that there was a weak negative correlation between PDEQ scores and the *religious coping strategy* sub-dimension scores of CSES and a very weak positive

correlation between PDEQ scores and the social support sub-dimension scores of CSES. When the correlations between CSES sub-dimensions and PDEQ were analysed, it was found that there was a weak positive and mostly moderate correlation between all sub-dimensions (Table 2).

**Table 2.** Correlations between PDEQ scale scores and CSES scale or BSI scores in participating university students

	PDEQ score	
	r	p
<b>Religious Coping (CSES)</b>	-0.117	0.001*
<b>Positive Reappraisal (CSES)</b>	0.024	0.500
<b>Seeking Social Support (CSES)</b>	0.077	0.031*
<b>Phobic anxiety (BSI)</b>	0.552	<0.001*
<b>Psychoticism (BSI)</b>	0.448	<0.001*
<b>Anxiety (BSI)</b>	0.585	<0.001*
<b>Obsessive-compulsivity (BSI)</b>	0.577	<0.001*
<b>Somatisation (BSI)</b>	0.510	<0.001*
<b>Interpersonal sensitivity (BSI)</b>	0.486	<0.001*
<b>Depression (BSI)</b>	0.454	<0.001*
<b>Hostility (BSI)</b>	0.448	<0.001*
<b>Paranoid ideation (BSI)</b>	0.420	<0.001*
<b>Additional items (BSI)</b>	0.491	<0.001*
<b>General severity index (BSI)</b>	0.560	<0.001*
<b>Positive symptom total (BSI)</b>	0.538	<0.001*
<b>Positive Symptom Distress Index (BSI)</b>	0.349	<0.001*

\* Significant correlation

CSES: Coping Strategies with Earthquake Stress Scale scores

BSI: Brief Symptom Inventory scores

The linear regression model created to predict the total score obtained from the PDEQ scale was found to be significant (stepwise model,  $p < 0.001$ ). The dependent variable of the model was the total score of the PDEQ scale, and the independent variables were scores from the subdimensions of the CSES scale

and from the subscales of BSI. It was found that obsessive-compulsivity (BSI), anxiety (BSI), depression (BSI), phobic anxiety (BSI), positive symptom distress index (BSI), and seeking social support sub-dimension (CSES) scores made significant contributions to the model. The independent variables in the model explained 37.9% of the change in the dependent variable, i.e., the PDEQ total score. The variable that contributed the most to the explanatory power of the model was the obsessive-compulsivity subscale of BSI. Each unit increase in the obsessive-compulsivity subscale score of BSI led to a 0.650 unit increase in the PDEQ score, each unit increase in the anxiety subscale score of BSI led to a 0.572 unit increase, each unit increase in the phobic anxiety subscale score of BSI led to a 0.390 unit increase, and each unit increase in seeking social support subdimension score of CSES led to a 0.597 unit increase in the PDEQ scale score. Each unit increase in the depression subscale score of BSI led to a decrease of 0.316 units in the PDEQ scale score, and each unit increase in the Positive Symptom Distress Index of BSI led to a decrease of 1.888 units in the PDEQ scale score (Table 3).

When PDEQ scale scores were compared according to experiences during the earthquake and sex, PDEQ scores were found to be significantly higher in females and in those with moderate or severe damage and destruction in their homes. It was found that sex and damage to the house had a moderate effect on peritraumatic dissociation (PDEQ) (Table 4).

**Table 3.** Linear regression analysis to estimate PDEQ scale score

Model R <sup>2</sup> =0.379	Unstandardised Coefficients			p	Collinearity Statistics	
	R <sup>2</sup> Change	β	S.E.		Tolerance	VIF
(Constant)	0.379	4.367	2.918	0.135		
Obsessive-Compulsivity (BSI)	0.309	0.650	0.096	<0.001	0.247	4.049
Anxiety (BSI)	0.029	0.572	0.100	<0.001	0.231	4.330
Depression (BSI)	0.021	-0.316	0.096	0.001	0.256	3.911
Phobic anxiety (BSI)	0.010	0.390	0.116	0.001	0.296	3.377
Positive Symptom Distress Index (BSI)	0.008	-1.888	0.645	0.004	0.359	2.783
Seeking social support (CSES)	0.006	0.597	0.214	0.005	0.963	1.039

CSES: Coping Strategies with Earthquake Stress Scale scores BSI: Brief Symptom Inventory scores

**Table 4.** Comparison of PDEQ scores according to gender or earthquake experiences

	PDEQ score		p	Effect size
	Mean± SD	Median		
<b>Sex</b>				
Male	13.43±11.38	10.0	<0.001	0.282**
Female	18.59±10.62	18.0		
<b>The family lives in one of the provinces affected by the earthquake</b>				
Yes	17.22±11.13	16.0	0.603	0.038
No	16.50±10.80	16.0		
<b>Suffered any physical injury in the earthquake</b>				
Yes	20.23±8.45	18.0	0.232	0.193
No	17.07±11.12	16.0		
<b>Home damaged in the earthquake</b>				
No damage	15.75 ± 10.62	15.0	<0.001	0.048*
Slightly damaged	17.06 ±11.26	16.0		
Moderately damage	23.67 ±10.46	24.5		
Heavily damage	23.87 ±10.45	25.0		
Destructed	25.25±8.65	23.5		
<b>Previously exposed to a destructive earthquake (6.0 and above)</b>				
Yes	16.16±11.23	16.0	0.312	0.059
No	17.28±11.06	16.0		

\*Eta square \*\*Rank biserial correlation

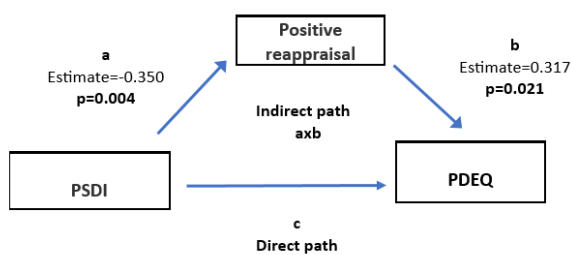
The mediating effects of earthquake stress coping strategies (with *religious coping, social support, positive reappraisal* subdimensions) on the relationship between psychiatric symptoms and peritraumatic dissociation were summarised in Table 5. Seeking social support that is a subdimension of coping strategies, was found to be a partial mediator for the relationship between depression that is a subscale of BSI and peritraumatic dissociation. Seeking social support was found

to be a partial mediator for the relationship between depression and peritraumatic dissociation. Depression decreased seeking social support and increased peritraumatic dissociation (Fig.2).

**Table 5.** Mediation analysis of psychiatric symptoms (from BSI), PDEQ and CSES scores

Mediators	Dependent variable	Path a	Path b	Path c (Direct effect)	Path a x b (Indirect effect)
		Estimates (S.E.)	Estimates (S.E.)	Estimates (S.E.)	Estimates (95% CI)
<b>X=Anxiety (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.0852 (0.015)***	0.0636 (0.118)	0.9607(0.050)***	-0.005 (-0.025 to 0.015)
Social support <sup>a</sup>	PDEQ	-0.002(0.008)	0.665(0.0218)**	0.956(0.049)***	-0.001 (-0.011 to 0.009)
Positive reappraisal <sup>a</sup>	PDEQ	-0.0013(0.015)	0.139(0.116)	0.957(0.049)***	-0.0019 (-0.007 to 0.003)
<b>X=Depression (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.081(0.014)***	-0.057(0.129)	0.737(0.054)***	0.004 (-0.015 to 0.025)
Social support <sup>a</sup>	PDEQ	-0.002(0.007)**	0.976(0.237)***	0.736(0.005)***	-0.022 (-0.040 to -0.003)*
Positive reappraisal <sup>a</sup>	PDEQ	-0.47(0.015)**	0.269(0.127)*	0.754(0.053)***	-0.0129 (-0.027 to 0.0014)
<b>X=Obsessive-compulsivity (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.0075(0.014)***	0.022(0.117)	0.959(0.049)***	-0.001(-0.01 to 0.015))
Social support <sup>a</sup>	PDEQ	-0.0122(0.007)	0.869(0.215)***	0.968(0.047)***	-0.001(-0.025 to 0.003)
Positive reappraisal <sup>a</sup>	PDEQ	-0.03(0.014)*	0.027(0.115)*	0.968(0.04)***	-0.009(0.005)
<b>X=General severity index (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.53(0.104)***	0.009(0.119)	6.54(0.354)***	-0.005(-0.131 to 0.121)
Social support <sup>a</sup>	PDEQ	-0.074(0.05)	0.828(0.219)***	6.60(0.345)***	-0.613(-0.158 to 0.035)
Positive reappraisal <sup>a</sup>	PDEQ	-0.164(0.105)	0.191(0.118)	6.57(0.348)***	-0.031(-0.08 to 0.02)
<b>X=Positive symptom total (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.040(0.006)***	0.088(0.122)	0.376(0.021)***	-0.003(-0.013 to 0.006)
Social support <sup>a</sup>	PDEQ	-0.001(0.003)	0.710(0.224)**	0.374(0.021)***	-0.001(-0.006 to 0.003)
Positive reappraisal <sup>a</sup>	PDEQ	-0.003(0.006)	0.112(0.119)	0.373(0.021)***	-4.22 (-0.002-0.001)
<b>X=Positive symptom distress index (BSI)</b>					
Religious coping <sup>a</sup>	PDEQ	-0.281(0.125)	-0.152(0.134)	4.69(0.460)***	0.042(-0.003 to 0.125)
Social support <sup>a</sup>	PDEQ	-0.162(0.067)*	0.884(0.241)***	4.885(0.456)***	-0.143(-0.283 to -0.002)
Positive reappraisal <sup>a</sup>	PDEQ	-0.350(0.121)**	0.317(0.138)*	4.853(0.459)***	-0.111(-0.232 to 0.009)

X=Predictors (BSI); \*p<0.05; \*\*p<0.01; \*\*\*p<0.001; S.E.=Standard error of estimate; CI=Confidence interval of estimates; BSI= Brief Symptom Inventory scores; PDEQ=Peritraumatic Dissociative Experiences Questionnaire Scale scores; <sup>a</sup>Subdimension scores of Coping Strategies with Earthquake Stress (CSES) Scale



**Figure 2.** Mediation model diagram between PSDI, positive reappraisal subdimension of CSES and PDEQ (Positive reappraisal was found to be a complete mediator for the relationship between PSDI and peritraumatic dissociation. The increase in the distress of symptoms that the individual perceives to be present in themselves reduces positive thinking and increases dissociation. Depression decreased seeking social support and increased peritraumatic dissociation) \*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05.

NOTE: In each model, two equations were used: (1) the effect of the independent variable (PDEQ) on the mediator (path a), and (2) the effects of the mediator on the outcome variable (path b) and the independent variable on the outcome variable (path c). The direct effect of the independent variable on outcomes is given by c and the mediated or indirect effect of the independent variable is given by the product a x b to aid the reader’s interpretation of mediation results; data for all other models described in the manuscript can be found in Table 5.

## DISCUSSION

Dissociation is characterised by the alteration or disruption of the normally integrative functions of memory, identity and consciousness. Besides causing distress to the individual, the phenomenon of dissociation provides some benefits and gains in order



to prevent the experience of pain, terror, sadness, and the feeling of the possibility of death during the trauma, to contribute to finding solutions to some conflicts, in short, to isolate catastrophic experiences. However, the drawback of this process is observed when this mechanism is automatically activated instead of adaptations that will affect the functionality of the individual to a lesser degree even when the life of the person is not in danger in the real field.<sup>17</sup>

In this study, the relationship between peritraumatic dissociation and psychiatric symptoms and coping strategies with earthquake stress were evaluated in a group of university students one month after the Mw7.7 Pazarcık and Mw7.6 Elbistan earthquakes which occurred nine hours apart. It was found that obsessive-compulsivity, anxiety, phobic anxiety, and depression were the psychiatric symptoms that predicted peritraumatic dissociation, although depression was a negative predictor, and using social support strategy, one of the coping strategies with earthquake stress was the predictor of dissociation. There was a weak negative correlation between peritraumatic dissociation and religious coping strategy, a very weak positive correlation with seeking social support strategy, and a moderate positive correlation between all subscales of the CSES. Peritraumatic dissociation scores were significantly higher in females and in those with moderate or severe damage or destruction in their homes. The most common psychiatric symptoms after the earthquake were found to be eating and drinking disorders, sleep disorders, thoughts about death and dying and feelings of guilt, anxiety, interpersonal sensitivity and obsessive-compulsivity.

In the study conducted by Uğur et al. (after Mw6.8 Elazığ-Sivrice earthquake), it was found that the cognitive sub-dimension of anxiety sensitivity made the most contribution to peritraumatic dissociation, and anxiety and perceived stress were important predictors. A moderate positive relationship was found between peritraumatic dissociation and anxiety and a weak positive relationship between peritraumatic dissociation and perceived stress. A weak positive relationship was found between peritraumatic dissociation and positive reappraisal, while a very weak negative relationship was found between peritraumatic dissociation and seeking social support. The most important finding in the study was that the highest contribution to the development of peritraumatic dissociation was due to the cognitive sub-dimension of anxiety sensitivity. It was emphasised that individuals with high anxiety sensitivity might experience higher peritraumatic dissociation with a higher risk of developing PTSD in the future.<sup>11</sup> In the study conducted by Nobakht et al. after the 2017 Iran earthquake (Mw7.3), it was emphasised that earthquake victims who reported a higher degree of peritraumatic dissociation during or immediately after the earthquake were more vulnerable to developing PTSD and should be prioritised in terms of psychological interventions<sup>18</sup>.

Duncan et al. evaluated peritraumatic dissociation, post-traumatic stress symptoms, anxiety, depression and emotional support in 101 adults exposed to the earthquake. Peritraumatic dissociation was found to predict post-traumatic stress symptoms and anxiety. Post-traumatic stress symptoms then predicted anxiety and depression. These findings supported the provision of psychological support following disasters

triggered by natural hazards and suggested that assessment of peritraumatic dissociation and post-traumatic stress symptoms immediately after the event might be useful to identify people in need of monitoring and intervention.<sup>3</sup> In the study conducted by Blanc et al. after the Haiti earthquake, significantly higher PDEQ scores were observed in terms of peritraumatic stress, PTSD symptoms and resilience measures between those who thought that the earthquake had a divine origin or was a punishment and those who did not. Peritraumatic reactions were reported as the best predictor for PTSD and depression symptoms<sup>19</sup>. In our study, a negative correlation was found between religious coping strategy scores, which is one of the sub-dimensions of the CSES scale, and dissociation scores (PDEQ). Cénat and Derivois in their study conducted 30 days after the Haiti earthquake, found the prevalence rates of PTSD and depressive symptoms as 36.75% and 25.98%, respectively. The best predictive variables for PTSD and depressive symptoms were reported as peritraumatic stress.<sup>20</sup> The American Psychiatric Association (APA) evaluated the relationship between pre-traumatic measurements and the PTSD symptom cluster and identified five peritraumatic response factors. Dissociation was determined as an important predictor of all PTSD symptoms. Due to the fundamental role of such reactions in the development of PTSD, it will be useful to examine the etiological mechanisms to predict those at the highest risk and to design preventive interventions.<sup>21,22</sup> In a meta-analysis study examining the relationship between peritraumatic dissociation and post-traumatic stress, a significant positive relationship was found between peritraumatic dissociation and PTSD.<sup>23</sup>

Our study is one of the few studies that examined the effects of multiple disasters triggered by natural hazards that rarely occur in the world –two destructive earthquakes on the same day– which is the strength of our study, while the fact that it was conducted in a place that was relatively less affected by the earthquake is our limitation. The fact that Çukurova University Faculty of Medicine was damaged in an aftershock that occurred approximately two weeks after two major earthquakes, and the hospital suspended education and continued to shrink is another strength of ours in terms of showing the impact on students. Our students studying in clinical classes actively worked in the management of this process. Our limitation is that we used a non-probability sampling method to reach students, but the fact that we reached 89% of the population strengthens our results.

## **CONCLUSION**

In our study, the predictors of peritraumatic dissociation were evaluated in the first month after the earthquake, and it was found that the most important predictor was the obsessive-compulsivity symptom, and the risk of peritraumatic dissociation was higher in those with high anxiety symptoms and those who sought more social support. A review of the literature showed that peritraumatic dissociation is an important factor in predicting the development of PTSD. In the early phase of disasters of natural origin such as earthquakes symptom screening will be important in terms of reducing the risk of developing PTSD by identifying individuals at risk for peritraumatic dissociation. Disasters are a significant problem affecting public health, and this also impacts the mental health of society. Intense emotional reactions

following a disaster are expected to diminish over time. However, due to the severity of the disaster, lack of social and psychological support, and the influence of risk factors, these reactions can turn into mental health issues. To mitigate the negative effects of disasters on mental health, at-risk groups should be identified, and effective psychosocial interventions that are relevant before, during, and after the disaster should be planned.

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