Capacity to Striving for Goals and Coping with Earthquake Stress in University Students After the Kahramanmaraş Earthquakes

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Abstract

Earthquakes are natural disasters that cause loss of life, property, and can lead to mental health issues such as PTSD. The Kahramanmaraş Earthquakes, which caused widespread destruction across Turkey on February 6, 2023, significantly impacted the psychosocial well-being of university students. The aim of this study was to investigate the relationship between the symptoms of post-traumatic stress disorder, coping strategies with earthquake stress, and striving for goals and the factors affecting them in university students after the 6 February earthquakes in Turkey. The mean scale scores of the participants were ESCS (46.0±8.7) high, SGS (40.8±6.1) moderate, and PSS-SR (32.9±12.0) moderate. According to the sociodemographic characteristics of the participants and their experiences in the earthquake, the mean scores of ESCS and PSS-SR and the median score value of SGS showed a significant difference (p<.01). A negative correlation was found between PSS-SR and ESCS and SGS (p<.01). In addition, the goals give up sub-dimension of SGS is the factor that most positively predicts PTSD. In this context there is a need to develop coping strategies for earthquake stress and the capacity to struggle for goals in university students. For this reason, universities and mental health professionals should develop programs and practices to help students achieve goals in their lives and develop strategies to cope with earthquake stress.

Keywords: *Earthquake, Trauma, Earthquake Stress, Striving for Goals, University Students*

Öz

Depremler, can ve mal kaybına neden olan ve TSSB gibi ruh sağlığı sorunlarına yol açabilen doğal afetlerdir. 6 Şubat 2023'te Türkiye genelinde yaygın yıkıma neden olan Kahramanmaraş Depremleri, üniversite öğrencilerinin psikososyal refahını önemli ölçüde etkiledi. Bu çalışmanın amacı Türkiye de meydana gelen 6 Şubat depremleri sonrasında üniversite öğrencilerinde travma sonrası stres bozukluğu belirtileri, deprem stresi ile baş etme stratejileri ve amaçlar için mücadele durumları arasındaki ilişkiyi ve bunlara etkide bulunan faktörleri araştırmaktı. Katılımcıların ölçek puan ortalamaları DSBSÖ (46.0±8.7) yüksek, AMÖ (40.8±6.1) ve TSSBBÖ-KD (32.9±12.0) için orta düzeyde saptanmıştır. Katılımcıların sosyodemografik özelliklerine ve depremde yaşadıkları deneyimlere göre DSBÖ ve TSSBBÖ-KD puan ortalaması, AMÖ ortanca puan değerinin anlamlı farklılık gösterdiği (p<.01), TSSBBÖ-KD ile DSBSÖ ve AMÖ arasında negatif yönlü ilişki saptanmıştır (p<.01). Ayrıca AMÖ'nin mücadeleyi bırakma alt boyutu TSSBB'yi en fazla pozitif yordayan faktördür. Bu bağlamda üniversite öğrencilerinde deprem stresi ile baş etme stratejilerinin ve amaçlar için mücadele kapasitesinin geliştirilmesine gereksinim duyulmaktadır. Bunun için üniversiteler ve ruh sağlığı profesyonelleri öğrencilerin yaşamlarında amaçlar edinmeleri ve deprem stresi baş etme stratejileri geliştirmeleri için programlar ve uygulamalar geliştirmelidirler.

Anahtar Kelimeler: *Earthquake, Trauma, Earthquake Stress, Striving for Goals, University Students*

Introduction

Disasters occur outside the ordinary course of life and create short and long-term effects in ecological, economic, physical, developmental, social and psychological dimensions (Baral & K.C, 2019). Earthquakes are among the natural disasters that cause loss of life and property. In Turkey, devastating earthquakes with magnitudes of 7.7 Mw and 7.6 Mw (Afad, 2023; MTA, 2023), with epicentres in Pazarcık and Elbistan districts of Kahramanmaraş, respectively, 9 hours apart on 6 February 2023, killed more than 50,000 people in 11 provinces in Turkey and Syria (International Medical Corps, 2023), injured many people, caused major material damage and collapse of different types of buildings (private houses, hospitals, schools, public buildings).

Earthquakes cause great destruction not only on the environment but also on people. In this context, it is included in traumatic events. Natural disasters such as earthquakes disrupt daily routines, create economic hardship, make it difficult to meet basic needs, and can cause mental health problems by triggering significant emotional reactions among survivors (World Health Organisation, 2002). Various studies in the literature show that there is a link between natural disasters and posttraumatic stress disorder (Farooqui et al., 2017; Dai et al., 2016). PTSD is one of the most common (Farooqui et al., 2017) and unrecognised (Cooper, Metcalf, & Phelps, 2014) mental health problems after earthquakes worldwide. Post-traumatic Stress Disorder (PTSD) is a mental disorder that occurs after a significant traumatic event and is characterized by symptoms of hyperarousal, avoidance of stimuli that remind or evoke the trauma, and re-experiencing the traumatic event through dreams and "flashbacks" and lasting at least 1 month (Şuer, 2005). PTSD, which occurs following the experience of a traumatic event, is a complex and serious psychological disorder that can lead to morbidity, impairment of life functions, or disability (Foa, Keane&Friedman, 2000).

Symptoms of posttraumatic stress disorder (PTSD) include intrusive thoughts or memories, avoidance of stimuli related to traumatic events, and increased arousal (APA, 2013; van der Kolk, 2000). The effects of PTSD may be deep and may negatively affect the daily life of the individual (Ahmed et al., 2023). Factors that increase the likelihood of developing PTSD after a traumatic event include previous trauma experience, death of family members, loss of home and property, severity of trauma, exposure to a different life stressor, injury and witnessing the death of people (Xu & Song, 2011; Naeem et al., 2011; Zhang & Ho, 2011), advanced age, being female, low education level and lack of social support (Ali et al., 2012; Jia et al., 2010).

The prevalence rate of PTSD after earthquakes is generally around 20% (Galea, Nandi, & Vlahov, 2005). This ratio varies in various studies after different earthquakes occurring in the world. When the rates are analysed; 51.9% in the Bam earthquake in Iran (Montazeri et al., 2005), 75% in the earthquake in Armenia (Goenjian et al., 2005), 34.3% in the Taiwan earthquake (Neria, Nandi, & Galea, 2008), and 21.5%-40.1% in the Wenchuan earthquake (Liu et al., 2010). According to a systematic review on the mental health effects of natural disasters in Southeast Asia, the rate of PTSD symptoms reported after natural disasters varies between 8.6% and 57.3% (Udomratn, 2008). Studies conducted after major earthquakes show that approximately one in four (23.66%) survivors were diagnosed with PTSD (Dai et al., 2016). Individuals' perception and reactions to traumatic events, as well as their ability to use coping mechanisms, are different (Korucu & Özer Kaya, 2023).

Studies on the effects of earthquake on people show that individuals may show different reactions to earthquake stress and the effects of stress may vary from individual to individual (Yöndem & Eren, 2008). Lazarus (1966) stated that stress does not always arise due to external factors, but may depend on the vulnerability, injurability and coping abilities of individuals. Coping involves ever-changing cognitive and behavioural efforts to manage external and/or internal demands that challenge or exceed one's resources (Lazarus & Folkman, 1984, p. 141). Coping is process-oriented and dynamic rather than trait-based (Brough, O'Driscoll, & Kalliath, 2005). It

includes conscious and purposeful actions used when individuals evaluate a situation as stressful (Lazarus & Folkman, 1984). Effective coping strategies can protect individuals from developing mental health problems when they experience an earthquake (Xu and He, 2012). Maladaptive coping strategies increase survivors' vulnerability to PTSD (Ehrenreich, 2001). In this context, unhealthy coping strategies that increase vulnerability include denial, avoidance, blame, helplessness, addiction and substance use (Adhikari Baral & Bhagawati, 2019).

One of the most important indicators that can contribute to psychosocial well-being in people against posttraumatic stress disorder is the goals acquired in life. The concept of purpose is also considered as a higher concept that includes different but interrelated factors such as personal struggle, individuals' desires, and self-designs (Kasser & Ryan, 1996). In this context, goals are among the factors that enable individuals to connect to life, protect their mental health, and help individuals reveal their own potential (Elliot & Dweck, 1988, Emmons, 1999; Eryılmaz, 2015). Individuals' efforts to achieve meaningful goals play an important role in their well-being and life adaptation (Brunstein, Schultheiss, & Gra¨ssmann, 1998; Brunstein, Schultheiss, & Maier, 1999). Goals contribute to successful developmental patterns throughout life and facilitate subjective well-being (Freund & Baltes, 2002; Heckhausen, Wrosch, & Schulz, 2019).

In most cases, people encounter relatively favourable opportunities to achieve their goals. Even if they face obstacles, they can overcome difficulties by spending more time and energy, getting help and advice from other people, or choosing a different way to achieve the desired goal (Heckhausen, 1999). However, individuals may encounter stressful life events (earthquakes, accidents, etc.) that may make it impossible for them to achieve their desired goals and require time and energy to manage. Consequently, changes occur in individuals' motivation, cognitions and emotions regarding the goals they want to realise (Simmen-Janevska, Brandstätter, Maercker, 2012) and individuals' well-being and life adaptation may be negatively affected. Nevertheless, some individuals do not stop fighting for their goals. Struggling to achieve goals is an indicator of healthy functioning and subjective well-being (Vainio & Daukantaite, 2016; Disabato, Goodman, & Kashdan, 2018). Striving for goals is explained as individuals' progress towards realising achievable and personally meaningful goals in daily life (Emmons, 1999). In the study conducted by Akın Arıkan, Demirtaş Zorbaz & Koç (2019), it was determined that the most common life goal among university students was the aim of living a meaningful life (Akın Arıkan, Demirtaş Zorbaz & Koç, 2019). Struggling for goals includes being committed to the goal, being persistent to realise the goals and not giving up efforts to achieve the goal (Locke & Latham, 2006; Eryılmaz, 2015).

University students are vulnerable to various stressors such as academic demands, financial pressures, and social adjustment difficulties. They can be particularly affected by events that may cause trauma, such as earthquakes. In their study by Kaya & Bayram (2024), anxiety and hope were examined together in university students after the Kahramanmaraş earthquakes, and as a result of the research, the anxiety levels of students who suffered material and moral damage were found to be high, and a negative relationship was found between hope and anxiety (Kaya & Bayram, 2024). Koçoğlu et al. (2023), the trauma levels of female university students were found to be higher than men after the Kahramanmaraş earthquakes (Koçoğlu et al., 2023). In this context, university students constitute an important study group to examine PTSD symptoms, earthquake stress coping strategies, and struggle for goals. Understanding university students' experiences, needs, earthquake stress coping strategies, and struggle for goals can help prevent PTSD symptoms and determine effective interventions. The aim of the study was to examine the relationship between university students' sociodemographic characteristics and earthquake-related life experiences, PTSD symptoms, earthquake stress coping strategies, and struggle for goals.

Research Questions

* What are the mean scores of the participants regarding the earthquake stress coping strategies scale, striving for goals scale (SGS), PTSD Symptom Scale-Self-Report (PSS-SR) and its sub-dimensions?

- According to the participants' sociodemographic characteristics and post-earthquake experiences, do the mean total scores of the earthquake stress coping strategies scale, striving for goals scale and PTSD Symptom Scale-Self-Report (PSS-SR) show statistically significant differences?
- How and in what direction is there a statistical relationship between the total mean score of the participants' PTSD Symptom Scale-Self-Report (PSS-SR) and the total and sub-dimension mean scores of the earthquake stress coping strategies scale and striving for goals scale?
- Do the participants' sociodemographic characteristics, post-earthquake experiences, earthquake stress coping strategies scale and striving for goals scale sub-dimension mean scores predict the PTSD Symptom Scale-Self-Report (PSS-SR) total mean score?

Materials and Methods

Study Design

The descriptive and cross-sectional study was conducted between 17/03/2023- 20/11/2023 at the Faculty of Health Sciences of Muş Alparslan University. The data were collected from the students of the Faculty of Health Sciences of Muş Alparslan University who volunteered to participate in the study through an electronic google form and face-to-face interviews.

Population and sample of the research

The study included students at the Faculty of Health Sciences of Muş Alparslan University, who were over the age of 18 and volunteered to participate in the study. Students who were under the age of 18, did not want to fill out the questionnaire, and did not continue their education were excluded from the research. The population of the study consisted of 1100 students continuing their education and training at Muş Alparslan University Faculty of Health Sciences. The sample consisted of 330 students who volunteered to participate in the study continuing their education and training at the Faculty of Health Sciences. The study was conducted in accordance with the Declaration of Helsinki. Since 8 of the 330 students who participated in the study filled the questionnaire incompletely, the data of 322 students were included in the analysis.

Data Collection Tools

Participants' Introductory Information Form, Earthquake Stress Coping Scale (ESCS), Striving For Goals Scale (SGS), PTSD Symptom Scale-Self-Report (PSS-SR) were used as data collection tools in the study.

Participants Introductory Information Form: The form prepared by the researchers consists of 16 questions in total. It consists of 4 questions about the sociodemographic characteristics of the participants and 12 questions to understand their experiences after the earthquake.

Earthquake Stress Coping Scale (ESCS): The validity and reliability study of the earthquake stress coping scale (ESCS) was conducted by Yöndem and Eren in 2008 (Yöndem & Eren, 2008). The ESCS consists of 16 items and three sub-dimensions (positive reappraisal, seeking social support, religious coping) in four-point Likert type (always, mostly, sometimes, never) (Yöndem & Eren, 2008). The score ranges for religious coping (2,8,9,10,11) and seeking social support (1,3,4,6,7), each sub-dimension consisting of 5 items, are 5-20, and the score range for the positive reappraisal (5,12,13,14,15,16) sub-dimension consisting of 6 items is 6-24 (Yöndem & Eren, 2008). Minimum (16) and maximum (64) points can be obtained from the scale (Yöndem & Eren, 2008). A high score for each sub-dimension indicates that the

individual uses that coping strategy more, while a low score indicates that the individual uses it less (Yöndem & Eren, 2008). When the internal consistency reliability coefficients of ESCS are analysed, it is seen that α coefficients are between α=69 and α=.85. It was determined as α=.85 for religious coping, α=.69 for positive reappraisal and α=.74 for seeking social support (Yöndem & Eren, 2008). ın this study, α=.78 for the total score, α=.78 for religious coping, α=.98 for positive reappraisal and α=.79 for seeking social support.

Striving for Goals Scale (SGS): This scale was developed by Eryılmaz (2015) in order to determine the individuals' setting goals and struggling for the goals they set, and its validity and reliability were carried out (Eryılmaz, 2005). The scale is four-point Likert type (strongly disagree, disagree, agree, strongly agree). It consists of 3 sub-dimensions and 17 questions, namely Commitment of Goals (1,2,3,4,5,6), Continuing Striving for goals (7,8,9,10,11,12) and Quitting Struggle (13,14,15,16,17) (Eryılmaz, 2015) (Eryılmaz, 2015). Eryılmaz (2015) states that when scoring the scale, an equality can be reached as "Struggling for Goals = (Commitment of Goals + Persistence in goal striving) - Goals give up". When the internal consistency reliability coefficients of the Striving for Goals Scale are analysed, it is seen that the α coefficients are between α=86 and α=.88. Accordingly, α=.88 for commitment of goals, α=.86 goals give up , and α=.86 persistence in goal striving , which are the sub-dimensions of the striving for goals scale (Eryılmaz, 2015). In this study, α=.96 was found for the total striving for goals scale, α=.93 for commitment of goals, α=.95 for goals give up, and α=.92 for persistence in goal strivings.

PTSD Symptom Scale-Self-Report (PSS-SR): This scale was adapted into Turkish by Aydın et al. (2012) in order to measure PTSD symptoms and validity and reliability studies were conducted (Aydın et al., 2012). The scale was developed by Foa et al. (1993) in order to screen PTSD symptoms in the community in accordance with the criteria in the Diagnostic and Statistical Manual of Mental Disorders. PTSD symptom scale-self-report (PSS-SR) is a self-assessment scale (Aydın et al., 2012). In the first part of the scale, which consists of 17 items scored between 0-3, there are three sub-dimensions of overstimulation (1,2,3,4,5), avoidance (6,7,8,9,10,11,12) and reliving (13,14,15,16,17) (Aydın et al., 2012). In addition, in the second part of the scale, there is another subscale consisting of nine-item yes-no questions measuring impairment in functionality due to posttraumatic symptoms (Aydın et al., 2012). When the internal consistency reliability coefficients of the PTSD Symptom Scale-Self-Report (PSS-SR) were examined; α=.90 for the total PTSD Symptom Scale-Self-Report (PSS-SR), its sub-dimensions were found as re-experiencing α=.81, avoidance α=.72, hyperarousal α=.81, and impairment in functioning α=.82 (Aydın et al., 2012). In this study, α=.89 was determined for the total PTSD Symptom Scale-Self-Report (PSS-SR), its sub-dimensions were re-experiencing α=.91, avoidance α=.90, hyperarousal α=.92, and impairment in functioning α=.87.

Data collection

At the time the study was planned, no similar research could be found in the literature. Furthermore, no research using the scales included in this study could be found. For this reason, the sample volume calculation method was used according to the correlation analysis calculation. In the literature, correlation coefficients are interpreted as 0.10-0.29 low, 0.30-0.49 medium, 0.50-1.00 high level effect sizes regardless of their sign (Cohen, 1992a; Field, 2009). Therefore, the sample size of the study was calculated using low effect size. The sample size of the study was determined with 90% power by taking type I error 0.05 and low correlation coefficient 0.2 according to the sample size calculation using GPower 3.1.9.2 programme. It was calculated that there should be at least 255 people for correlation analysis (Cohen, 1992b; Faul et al., 2007). In addition, when the acceptable sample sizes for some universes in scientific research are taken into consideration, the universe size is 1100, while the required sample size is 285 (Sekaran, 2003). Therefore, our sample size of 330 participants is consistent with these findings and is considered sufficient for the current study.

The data of the study were collected between 17/03/2023 - 20/11/2023 at Muş Alparslan University, Faculty of Health Sciences. Data collection took a total of 20 minutes for each participant. No sampling method was used in data collection and all students studying at the Faculty of Health Sciences were tried to be reached.

Statistical Analysis

SPSS 26.0 package program was used for data analysis. Descriptive statistics such as number (percentage), mean, ±standard deviation, median (minimum-maximum) values, Cronbach alpha values of the scales were calculated. The upper limit of the margin of error in the analyses was taken as .05. The normality of the distributions of numerical variables was analyzed by skewness and kurtosis coefficients. Accordingly, the skewness and kurtosis coefficient of the total ESCS was determined between 0.477 and -0.765. The skewness and kurtosis coefficients for the total PSS-SR were found to be between 0.392 and -0.601. The skewness kurtosis values of the total of the SGS were found to be between -0.494 and -0.381. According to Tabachnic and Fidell (2015), a range between -1.5 and +1.5 indicates that the relevant variable can be normally distributed. Accordingly, when the skewness and kurtosis coefficients are evaluated in the study, it can be stated that the mean total scores of PSS-SR and ESCS show a normal distribution, while the mean total score of SGS does not show a normal distribution. In order to determine whether the mean total scores of ESCS and PSS-SR differed significantly according to the sociodemographic characteristics and post-earthquake experiences of the participants, Independent Sample t-test, one of the parametric tests, was used for pairwise comparisons, and One Way ANOVA test was used for multiple comparisons. In order to determine whether the mean total score of the SGS showed a significant difference according to these variables, Mann-Whitney U test was used for pairwise comparisons and Kruskal-Wallis H test was used for multiple comparisons. Spearman's correlation analysis was applied to determine whether there was a significant relationship between the mean total score of PSS-SR and the mean total and sub-dimension scores of ESCS and SGS, and if there was, to determine the direction and degree of the relationship.

The effect of the participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR was analyzed by stepwise multiple linear regression analysis. The statistical significance of the study was accepted as $p<0.05$ at 95% confidence interval.

Ethical Considerations

Before starting the study, ethics committee permission (Date: 10/03/2023, No: 34) was obtained from Muş Alparslan University Scientific Research and Publication Ethics Committee. Then, institutional permission (Date: 15.03.2023, No: 87317) was obtained from the Dean's Office of the Faculty of Health Sciences. Informed consent was obtained from the participants before the questionnaire was administered.

Results

The findings regarding the mean scores of the scale and subscale scores of the participants are given in Table 1. The mean total scores of the participants were found to be 46.0±8.7, 40.8±6.1, 32.9±12.0 on the ESCS, SGS and PSS-SR, respectively (Table 1).

The difference between the mean scale scores of the participants according to their sociodemographic characteristics and their experiences during the earthquake is given in Table 2. Participants' grade level [F(3,317)=9.8, p<.01], age group [F(4,316)=6.0, p<.01], gender [(t(319)=3.7, p<.01], income status [F(2,318)=23.7, p<. 01], death of a loved one in an earthquake [t(319)=5.3, p<.01], injury in an earthquake [t(319)=4.8, p<.01], injury of a relative in an earthquake [t(319)=8.7, p<.01], loss of housing/property in an earthquake [t(319)=9. 4, p<.01], loss of job due to earthquake [t(319)=8.6, p<.01], status of continuing to live in the earthquake zone [t(319)=3.8, p<.01], status of close family members continuing to live in the

Table 1. Findings related to the mean scores of ESCS, SGS and PSS-SR and sub-dimension scores of the participants

Scale and sub-dimensions	Available from scale min-max values	Number of Participants (n=322)		
		Mean±SD	Min-Max (Median)	α
ESCS	16-64	46.0±8.7	19-62 (47)	.78
ESCS- Religious Coping	5-20	14.9±3.2	6-20 (15)	.78
ESCS- Positive Reappraisal	6-24	17.9±4.7	6-24 (18)	.98
ESCS- Seeking Social Support	5-20	13.1±3.9	5-20 (14)	.79
SGS	17-68	44.9±4.97	32-60 (46)	.40
SGS- Commitment of Goals	6-24	17.9±4.92	6-24 (18)	.93
SGS- Goals give up	6-24	12.2±5.18	6-24 (12)	.95
SGS-Persistence in Goal Striving	5-20	14.7±4.11	5-20 (15)	.92
PSS-SR	0-51	32.9±12.0	15-63 (33)	.89
PSS-SR- Reliving	0-15	5.6±4.4	0-15 (5)	.91
PSS-SR- Avoidance	0-21	7.9±5.8	0-21 (7)	.90
PSS-SR- Overstimulation	0-15	5.1±4.6	0-15 (5)	.92
PSS-SR- İmpaired Functionality	0-27	14.1±2.9	9-22 (15)	.87

ESCS: Earthquake Stress Coping Scale
SGS: Striving for Goals Scale
PSS-SR: PTSD Symptom Scale-Self-Report
SD: Standart Deviation
Min: Minimum
Max: Maximum
α: Cronbach Alpha değeri

earthquake zone [t(319)=4.4, p<.01] and according to the types of needs in the earthquake zone [F(5,315)=6.6, p<.01], the mean score of the ESCS showed a significant difference (Table 2).

Participants' grade level [KW(sd=3, n=322)=31.5, p<.01], age group [KW(sd=4,n=322)=39.1, p<.01], gender [U=6733.5, p<.01], income status [KW(sd=2,n=322)=12.5, p<. 01], death of a loved one in an earthquake [U=7389.5, p<.05], injury in an earthquake [U=1324.5, p<.01], injury of a relative in an earthquake [U=6633.0, p<.01], loss of housing/property in an earthquake [U=4223. 0, p<.01], loss of job due to earthquake [U=6272.5, p<.01], status of continuing to live in the earthquake zone [U=7428.5, p<.01], status of close family members continuing to live in the earthquake zone [U=9092.0, p<.01] and according to the types of needs in the earthquake zone [KW(sd=5,n=322)=17.29, p<.01], the median values of the SGS score show a significant difference (Table 2).

Participants' grade level [F(3,317)=11.8, p<.01], age group [F(4,316)=5.5, p<.01], gender [t(319)=6.0, p<.01], income status [F(2,318)=30.3, p<.01], death of a loved one in an earthquake [t(319)=8. 5, p<.01], injury in an earthquake [t(319)=4.6, p<.01], injury of a relative in an earthquake [t(319)=7.5, p<.01], loss of housing/property in an earthquake [t(319)=9.1, p<. 01], loss of job due to earthquake [t(319)=9.7, p<.01], status of continuing to live in the earthquake zone [t(319)=7.2, p<.01], status of close family members continuing to live in the earthquake zone [t(319)=9.5, p<.01] and types of needs in the earthquake zone [F(5,315)=13.2, p<.01], the mean score of the PSS-SR showed a significant difference (Table 2).

There is a moderate negative correlation between the mean scores of the participants on the PTSBSS and the mean scores on the ESCS (r=-53), ESCS- positive reappraisal (r=-.54), ESCS- seeking social support (r=-.59), SGS (r=-.45), SGS (r=-.51), SGS commitment of goals (r=-.58), and SGS persistence in goal striving (r=-.61), there was a moderately significant positive correlation between goals give up (r=.64) (p<.01) (Table 3).

Table 4 presents the findings of the stepwise linear regression analysis examining the effect of participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR. In the first stage, the highest and positive effect of %42.5 on the mean score of the participants' PSS-SR was found to be the quitting of the struggle in the first stage. In the second stage, SGS - goals give up and close family members continuing to live in the earthquake zone (no) % 51.2, in the third stage, the SGS - Goals give up, close family members continuing to live in the earthquake zone (no) and the ESCS - seeking social support %55.4, in the fourth stage, SGS - goals give up, close family members continuing to live in the earthquake zone (no),

Table 2. Comparison of the mean scale scores of the participants according to their sociodemographic characteristics and post-earthquake experiences

Sociodemographic characteristics and post-earthquake experiences	Total (n=322) X±SD / %(n)	ESCS X ±SD	SGS Median	PSS-SR X±SD
Class level				
1	41.3 (133)	44.5 ±9.37	136.0	37.0±12.0
2	13.4 (43)	41.9 ±7.7	138.4	31.0±9.4
3	17.4 (56)	49.8±8.8	203.3	26.9±11.1
4	28.0 (90)	47.7 ±6.6	184.0	31.4±11.5
Test/*p*		F=9.8 ***p*=.000**	KW=29.3 ***p*=.000**	F=11.8 ***p*=.000**
Age				
Between 17-19 years old	26.1 (84)	42.2±10.4	106.8	37.8±13.0
Between 20-22 years old	52.5 (169)	47.5±8.1	183.9	30.9±11.4
Between 23-25 years old	17.7 (57)	46.7±6.4	170.8	31.0±10.7
Between 26-28 years old	0.9 (3)	52.0±4.5	234.6	32.6±9.0
29 years and over	2.8 (9)	47.1±4.8	166.9	36.1±7.4
Test/*p*		F=6.0 ***p*=.000**	KW=41.5 ***p*=.000**	F=5.5 ***p*=.000**
Gender				
Female	69.6(224)	44.8±8.7	146.0	35.4±10.8
Male	30.4(98)	48.7±8.0	196.8	27.1±12.5
Test/*p*		t=3.7 ***p*=.000**	U=7517 ***p*=.000**	t =6.0 ***p*=.000**
Income Status				
Income <Expense	20.8 (67)	39.8±11.1	135.0	42.3±11.7
Income =Expense	72.0 (232)	47.7±6.8	169.2	30.6±10.8
Income >Expense	7.1 (23)	46.2±9.7	160.1	28.7±11.1
Test/*p*		F=23.7 ***p*=.000**	KW=.7.0 ***p*=.029**	F=30.3 ***p*=.000**
Death of a loved one in an earthquake				
Yes	21.7(70)	41.2±10.1	144.31	42.8±10.8
No	78.3(252)	47.3±7.8	166.27	30.2±10.8
Test/p		t=5.3 ***p*=.000**	U=7617 *p*=0.08	t=8.5 ***p*=.000**
Injury in earthquake				
Yes	5.3(17)	36.3±13.8	84.94	45.7±12.0
No	94.7(305)	46.5±8.0	165.77	32.2±11.6
Test/p		t=4.8 ***p*=.000**	U=1291 ***p*=.000**	t=4.6 ***p*=.000**
Injury of a relative in an earthquake				
Yes	28.6(92)	39.9±9.9	123.2	42.3±10.8
No	71.4(230)	48.4±6.8	176.7	29.1±10.3
Test/p		t=8.7 ***p*=.000**	U=70.63.5 ***p*=.000**	t=7.5 ***p*=.000**
Housing/property loss in earthquake				
Yes	19.6(63)	37.7±10.5	105.2	44.0±10.8
No	80.4(259)	48.0±6.8	175.1	30.2±10.6
Test/p		t=9.4 ***p*=.000**	U=4613.5 ***p*=.000**	t=9.1 ***p*=.000**
Job loss in the family due to the earthquake				
Yes	30.4(98)	40.3±9.6	118.7	41.5±10.3
No	69.6(224)	48.5±6.9	180.2	29.1±10.6
Test/p		t=8.6 ***p*=.000**	U=6784.5 ***p*=.000**	t=9.7 ***p*=.000**
Continuing to live in the earthquake zone				
Yes	28.3(91)	43.0±11.0	128.6	40.0±12.2
No	71.7(231)	47.1±7.3	174.4	30.0±10.6
Test/p		t=+3.2 ***p*=.000**	U=7517.5 ***p*=.000**	t=7.2 ***p*=.000**
Status of immediate family members continuing to live in the earthquake zone				
Yes	50.3(162)	43.6±9.6	139.1	39.1±11.2
No	49.7(160)	47.9±7.4	179.5	27.8±10.0
Test/p		t=-4.4 ***p*=.000**	U=9601 ***p*=.000**	t=9.5 ***p*=.000**
Types of needs in the earthquake zone				
1. Basic physical needs	39.1(126)	42.7±9.6	148.75	38.0±12.1
2. Security needs	11.8(38)	48.0±10.6	188.18	26.9±11.1
3. Communication needs	9.0(29)	49.0±4.3	198.09	24.1±9.7
4. Job need	3.1(10)	49.7±5.8	213.75	26.1±7.4
5. Psychosocial support needs	21.1(68)	47.2±7.5	146.96	30.0±10.3
6. All of them	15.8(51)	48.4±5.7	161.46	34.6±9.7
Test/p		**F=6.6 ***p*=.000**	KW=14.8 ***p*=.011**	***F=13. ***p*=.000**

ESCS: Earthquake Stress Coping Scale
SGS: Striving for Goals Scale
PSS-SR: PTSD Symptom Scale-Self-Report
X: Mean
SD: Standart Deviation
Median: Sıra ortalaması
F: One Way Anova

KW: Kruskal Wallis Test
U: Mann Whitney U Test
t: Independent Sample t Test
***p*:** Statistical significance value, *p*<.05
*Mann Whitney U Test was found zero

Table 3. The relationship between the mean scores of PSS-SR, ESCS, SGS and sub-dimension scores of the participants

Scale and sub-dimensions	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. PSS-SR	1	-.53**	.084	-.54**	-.59**	-.45**	-.58**	.64**	-.61**
2. ESCS		1	.35**	.90**	.72**	.49**	.63**	-.68**	.66**
3. ESCS- Religious Coping			1	.17**	-.17**	.019	.05	-.12*	.06
4. ESCS- Positive Reappraisal				1	.58**	.51**	.66**	-.69**	.68**
5. ESCS- Seeking Social Support					1	.44**	.54**	-.54**	.57**
6. SGS						1	.85**	-.47**	.79**
7. SGS-Commitment of Goals							1	-.78**	.83**
8. SGS-Goals give up								1	-.81**
9. SGS- Persistence in Goal Striving									1

ESCS: Earthquake Stress Coping Scale
SGS: Striving for Goals Scale
PSS-SR: PTSD Symptom Scale-Self-Report

Spearman correlation analysis was performed between the variables
**p<0.01. * p<0.05

ESCS - seeking social support, loss of a relative in the earthquake (no) % 58.8, in the fifth stage, SGS - Goals give up, close family members continuing to live in the earthquake zone (no), ESCS - seeking social support, loss of a relative in the earthquake (no) and SGS - persistence in goal striving %60.1, ın the sixth stage, SGS- Goals give up, close family members continuing to live in the earthquake zone (no), ESCS-seeking social support, loss of a relative in the earthquake (no), SGS- persistence in goal striving the struggle for the goal, and gender being male affect with a rate of % 60.7 (p<.05) (Table 4).Accordingly, the mean score of the participants' PSS-SR - goals give up positively with a rate of 42.5%, not having close family members living in the earthquake zone negatively with a rate of 8.5%, ESCS-seeking social support negatively with a rate of 4.2%, not losing a relative in the earthquake negatively with a rate of 3.4%, persistence in goal striving negatively with a rate of 1.3%, and gender being male negatively with a rate of 6% (p<.05) (Table 4).

Discussion

In this study, a statistically significant relationship was determined between post-traumatic stress disorder symptoms, coping strategies with earthquake stress and striving for goals in university students after the Kahramanmaraş earthquakes that occurred 9 hours apart on February 6, 2023. In addition, coping strategies with earthquake stress and struggling for goals were found to effect PTSD symptoms. In addition, as a result of the study, it was found that according to the sociodemographic characteristics of university students (age, gender, income status) and various consequences of the earthquake; earthquake stress coping strategies and striving for goals and PTSD symptoms differed.

Among the sociodemographic findings obtained from the study, firstly, when the averages of the total scores obtained from the earthquake stress coping scale (ESCS) and striving for goals scales (SGS) were compared according to age, it was determined that the highest mean score was found in university students aged 26-28 years and the lowest mean score was found in students aged 17-19 years. When the averages of the scores of university students on the total of the PSS-SR are compared, the highest mean score is observed in students aged 17-19 years and the lowest mean score is observed in students aged 20-22 years. When this finding of the study is evaluated, it can be concluded that the most risky group in terms of PTSD may occur in students who are in the transition phase from adolescence to young adulthood, who are new to university, strategies for coping with earthquake stress and struggling for goals may increase after 20-22 years of age and are most common in adults between 26-28 years of age, ıt was found that the least number of students between the ages of 17 and 19 years. In this context, it can be stated that students between the ages of 17-19 who are new to university may need psychosocial interventions to improve their coping strategies with earthquake stress and their ability to striving for goals.

Among the sociodemographic findings obtained from the study, when the averages of the total scores obtained from the earthquake stress coping scale and striving for goals scales were compared according to gender, it was found that male university students had higher mean scores than female university students. Gender

Table 4. Results of the stepwise linear regression analysis results regarding the prediction of PSS-SR mean score by participants' sociodemographic characteristics, post-earthquake experiences, ESCS and SGS sub-dimension mean scores

Model	Variables						95,0% CI for B		Collinearity Statistics	
		B	SE	β	F	*p*	Lower	Upper	Tolerance	VIF
Stage 1	Constant	14.471	1.300		11.135	.000	11.914	17.028		
	SGS-Goals give up	1.513	.098	.654	15.421	.000	1.320	1.706	1.000	1.000
	R=.654, R^2=.427, Adjusted R^2=.425, F=237.819, *p*<.001									
Stage 2	Constant	28.565	2.206		12.946	.000	24.224	32.906		
	SGS-Goals give up	1.308	.094	.565	13.861	.000	1.122	1.494	.918	1.089
	Relatives or family members continue to live in the earthquake zone (no)	-7.470	.982	-.310	-7.605	.000	-9.403	-5.538	.918	1.089
	R=.718, R^2=.515, Adjusted R^2=.512, F=169.012, *p*<.001									
Stage 3	Constant	40.896	3.055		13.389	.000	34.886	46.905		
	SGS-Goals give up	.996	.106	.430	9.385	.000	.787	1.205	.663	1.508
	Relatives or family members continue to live in the earthquake zone (no)	-6.121	.969	-.254	-6.313	.000	-8.028	-4.213	.861	1.162
	ESCS-Seeking Social Support	-.806	.144	-.263	-5.580	.000	-1.090	-.522	.629	1.591
	R=.747, R^2=.559, Adjusted R^2=.554, F=133.731, *p*<.001									
Stage 4	Constant	49.381	3.368		14.661	.000	42.754	56.007		
	SGS-Goals give up	.936	.103	.404	9.114	.000	.734	1.138	.655	1.527
	Relatives or family members continue to live in the earthquake zone (no)	-5.027	.956	-.209	-5.256	.000	-6.909	-3.145	.819	1.222
	ESCS-Seeking Social Support	-.738	.140	-.240	-5.286	.000	-1.012	-.463	.623	1.605
	Loss of relative in earthquake (no)	-5.800	1.125	-.199	-5.154	.000	-8.015	-3.586	.867	1.154
	R=.770, R^2=.593, Adjusted R^2=.588, F=115.029, *p*<.001									
Stage 5	Constant	62.415	5.119		12.193	.000	52.344	72.487		
	SGS-Goals give up	.548	.154	.237	3.560	.000	.245	.851	.282	3.543
	Relatives or family members continue to live in the earthquake zone (no)	-4.777	.944	-.198	-5.058	.000	-6.635	-2.919	.813	1.229
	ESCS-Seeking Social Support	-.630	.141	-.205	-4.464	.000	-.908	-.352	.590	1.694
	Loss of relative in earthquake (no)	-6.050	1.110	-.207	-5.449	.000	-8.235	-3.866	.863	1.159
	SGS- Persistence in Goal Striving	-.654	.196	-.225	-3.342	.001	-1.039	-.269	.276	3.623
	R=.779, R^2=.607, Adjusted R^2=.601, F=97.217, *p*<.001									
Stage 6	Constant	65.430	5.210		12.558	.000	55.179	75.682		
	SGS-Goals give up	.503	.154	.217	3.275	.001	.201	.806	.279	3.590
	Relatives or family members continue to live in the earthquake zone (no)	-4.274	.957	-.177	-4.468	.000	-6.157	-2.392	.779	1.284
	ESCS-Seeking Social Support	-.697	.142	-.227	-4.897	.000	-.977	-.417	.570	1.754
	Loss of relative in earthquake (no)	-6.006	1.101	-.206	-5.456	.000	-8.171	-3.840	.862	1.159
	SGS-Persistence in goal striving	-.595	.195	-.204	-3.043	.003	-.979	-.210	.272	3.675
	Gender (Male)	-2.543	.996	-.098	-2.552	.011	-4.504	-.583	.838	1.194
	R=.784, R^2=.615, Adjusted R^2=.607, F=83.519, *p*<.001, Durbin-Watson=1.618									

ESCS: Earthquake Stress Coping Scale
SGS: Striving for Goals Scale
PSS-SR: PTSD Symptom Scale-Self-Report
B: Unstandardized Coefficients
SE: Standardize Error
β: Standardized Coefficients
F: Stepwise Linear Regression Analysis Test Statistic Value
CI: Confidence Interval
VIF: Variance Inflation Factor

differences are effective in the use of coping strategies (Hollifield et al., 2008; Xu & He, 2012). While men are more likely than women to use confrontational coping strategies to solve problems (Adhikari & K.C., 2019), women are more likely to remain passive in denying what happened to them and distancing themselves from coping with the situation (Olff et al., 2007). In a study conducted by Luce et al. (2022) with Nepal earthquake survivors, it was determined that men showed coping skills at a higher rate than women. Studies conducted in various countries show that women are more afraid of earthquakes than men (Goltz & Bourque, 2017). This may affect coping strategies for earthquake stress. The negative impact of disasters on women is high (Gaillard, Gorman-Murray, & Fordham, 2017). In this study, when the mean scores of female students were compared with the mean scores of male students, it was determined that the mean score of female students was higher than that of male students. Women are more at risk than men in terms of PTSD after an earthquake (Cerdá et al., 2013). This finding of the study suggests that women may need interventions to improve their coping strategies with the stress that the earthquake may cause and their ability to struggle for goals. In addition, it can be said that female students may be more at risk for PTSD symptoms than males, and that women may need psychosocial interventions to prevent and reduce mental health problems after natural disasters such as earthquakes more than men.

When the averages of the total scores obtained from the scale of coping with earthquake stress according to income status are compared, the highest mean score among university students can be seen in those with medium income, followed by those with high income, and the lowest mean score can be seen in those with low income, when the mean scores obtained from the total scale of striving for goals were compared, it was found that the mean scores of those with medium and high income levels were close to each other, while the lowest mean score could be seen in those with low income levels. Low-income households face various problems in accessing the resources they need to cope with the aftermath of disasters. In this context, they face more challenges in terms of stress than people with higher incomes. In this study, when the mean scores of university students according to income status were compared in the total of the PSS-SR, ıt was found that the highest mean score was observed in those with low income levels and the lowest mean score was observed in those with high income levels. Low income level is a risk factor for PTSD (Cohen et al., 2019). Valladares-Garrido et al. (2022) also found that low income may be a risk factor for PTSD in the study they conducted after the earthquake in Piura, Peru. Accordingly, it can be stated that those with low income among university students may be at risk for PTSD, and inadequate coping strategies and striving for goals may be seen in coping with earthquake stress.

Within the scope of the study, it was examined whether the mean scores of the total scores obtained from the earthquake stress coping scale, the striving for goals scale and the PSS-SR differed according to the loss of life, injury, housing, property and job loss caused by the earthquake, and the status of continuing to live in the earthquake zone. According to the results, university students who lost someone in the earthquake, who themselves or their relatives were injured, who had housing, property and job losses in their families, and whose families continued to live in the earthquake zone had lower mean scores on the coping strategies scale and the striving for goals scale compared to the students who did not experience loss of life in the earthquake, who did not have injuries in themselves or their relatives, who did not experience housing, property and job losses in their families, and whose families did not live in the earthquake zone, ıt was found that the mean total score obtained from the total of the PSS-SR was higher in this group. Löw, Rihtarić, Vrselja (2023) found that PTSD may be seen in those whose houses were damaged after the Croatian earthquake, and that the possibility of passive coping was high. Losses due to earthquakes can aggravate stress factors and other problems that existed in people's lives before the earthquake (Hewitt, 1997; Bolin and Stanford, 1998). Reinhardt et al. (2021) conducted a study with survivors of the Wenchuan earthquake and found that PTSD may be observed in the injured. In addition, the injury of one of their relatives was also determined

as a risk factor for PTSD (Valladares-Garrido et al., 2022). İlhan et al. (2023) conducted a study with survivors of the February 6 earthquake in Turkey and similar to the results of this study, it was found that having lost loved ones was a risk factor for PTSD. As a result, it can be said that PTSD symptoms may be more common in university students who have experienced loss of life, injury, loss of housing, property and work in their families, and whose families continue to live in the earthquake zone, and that these life events caused by the earthquake may cause inadequacy in coping strategies and struggle for goals.

When the averages of the total scores obtained from the scale of earthquake stress coping and the scale of striving for goals according to the types of needs perceived by university students regarding the earthquake zone are examined, it is seen that the highest mean score is in the participants who stated the need to work, and the lowest mean score is in the participants who stated basic physical needs (food, water, clothing, heating). When the mean score obtained from the total PSS-SR is examined according to the types of needs perceived by university students regarding the earthquake zone, it is seen that the highest mean score is in the participants who stated basic physical needs (food, water, clothing, heating) and the lowest mean score is in the participants who stated the need for communication. When these findings are evaluated, problems that may be experienced in meeting basic physical needs after the earthquake may increase the risk of PTSD symptoms.

A moderate negative correlation was found between university students' scores on the total of the PSS-SR and positive reappraisal and seeking social support from the total and sub-dimensions of the ESCS. A statistically significant moderate negative correlation was found between the participants' scores on the total of the PSS-SR and the total and sub-dimensions of the SGS-commitment of goals and SGS- persistence in goal striving.

There was a statistically significant positive relationship between the PSS-SR and the sub-dimension of goals give up, which is one of the sub-dimensions of the SGS, at a moderate level. There are studies on the effectiveness of positive coping strategies to protect mental health after natural disasters (Spurrell, 1993; Udomratn, 2008). Accessing social support shortly after the earthquake is an important resource in coping with earthquake stress (Alipour & Ahmadi, 2020). In a study conducted with a group of teachers 3 months after the Lushan earthquake, they found that perceived social support can reduce PTSD. The stress that occurs after traumatic life events negatively affects striving for goals and individuals may give up fighting for their goals (Simmen-Janevska, Brandstätter, Maercker, 2012). Individuals react to a traumatic event with intense feelings of fear, helplessness or terror and perceive the stressor as uncontrollable or unpredictable (Foa, Zinbarg, & Rothbaum, 1992). Exposure to such uncontrollable adversities can lead to learned helplessness (Seligman, 1975), which in turn can negatively affect future expectations and people may give up on their goals. When this finding is evaluated, as coping strategies for earthquake stress and striving for goals increase, post-traumatic stress disorder symptoms may decrease, PTSD symptoms may also increase as there is an increase in the situation of goals give up for goals. In this context, it can have a negative impact on goal setting and goal implementation (Simmen-Janevska, Brandstätter, Maercker, 2012).

When the results of the stepwise linear regression analysis examining the effect of the participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR were evaluated the mean PSS-SR scores of university students were positively influenced by the following variables: SGS- goals give up with a rate of %42.5, not having close family members living in the earthquake zone with a rate of %8.5 negatively, ESCS - seeking social support with a rate of %4.2 negatively; not having a relative lost in the earthquake with a rate of %3.4 negatively; SGS - persistence in goal striving for the goal with a rate of %1.3 negatively; and gender being male with a rate of %6 negatively ($p<.05$).

Conclusion

When the results obtained from the study are evaluated, it can be stated that among university students, those who are younger, women, those with low income, those who lost their relatives, those whose relatives or themselves were injured, those who experienced loss of housing, property and work in their families, those who continue to live in the earthquake zone, and those who have problems in meeting basic needs are at risk for PTSD symptoms. ESCS-positive reappraisal and ESCS-seeking social support, which are among the coping strategies of university students with earthquake stress, and ensuring positive development in attachment to the goal and continuing the struggle for the goal may be effective in preventing and reducing PTSD symptoms. In this context, there is a need for psychosocial interventions to develop strategies for struggling for goals and coping with earthquake stress in university students in order to prevent and reduce PTSD symptoms that may potentially occur due to earthquake.

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