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Earthquake effects on youth: understanding psychological challenges and support needs

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Abstract

The aim of this study is to examine the effects of the earthquake on the psychological symptoms of high school students, and to understand the readiness of school counseling services based on the available data. In this context, the research was designed within the scope of two different studies: Study 1: The views of school counselors, and students on the difficulties experienced due to the earthquake. Study 2: The effects of the earthquake on students' psychological symptoms. In accordance with the purpose of the Study 1, phenomenological design, one of the qualitative research methods, was used. Findings of Study 1 signified that the students experienced academic, psychological, social, and physiological difficulties due to the earthquake. It was concluded that the students coped with the effects of the earthquake by receiving environmental support, and using optimistic thinking. School psychological counselors stated that they observed difficulties such as loss, and mourning, and absence from school in students due to the earthquake during their meetings with them. They also expressed that the students needed more academic, and psychological help after the earthquake, and they planned to deal with psychological, and academic issues in the coming period. Results of Study 2 pointed out that 246 individuals (43.3%) scored 37 or above on the Impact of Event Scale-Revised (IES-R). This indicated that these individuals had severe impact of the event/trauma symptoms. SEM analysis revealed that IES-R scores had a total effect of 0.67 on anxiety, 0.69 on depression, 0.68 on negative self-concept, 0.68 on somatisation, and 0.63 on hostility scores. In addition, the scores of the female students related to the variables such as anxiety, depression, negative self-concept, somatisation, hostility, and impact of events were significantly higher than the male students. Also, the students who lost their relatives due to the earthquake had significantly higher scores than those who did not lose their relatives in all the variables except somatisation. Besides, the students who had to change their locations after the earthquake had significantly higher scores than those who did not have to change their locations in terms of the impact of events.

Keywords Earthquake, Psychological symptoms, High school students, School counselors, Counseling services

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Introduction

Natural disasters like earthquakes profoundly affect society and can cause psychological symptoms in students. School guidance services play a crucial role in helping students cope with stress and trauma. Effective preparation and support from these services are essential. On February 6, 2023, two major earthquakes (magnitudes 7.7 and 7.6) struck Turkey, impacting eleven provinces and affecting 15.8 million people, with at least 50,783 fatalities [1, 2]. The earthquakes significantly impacted adolescents' mental health, causing losses of family, relatives, and friends. Common psychological symptoms post-disaster include somatization, OCD, depression, anxiety, hostility, phobic anxiety, paranoid thoughts, psychoticism, interpersonal sensitivity, and suicidal ideation [3, 4]. Research after the 1999 Turkey earthquake showed 60% of children and adolescents experienced PTSD and 31% experienced depression [5]. In Indonesia, the PTSD prevalence rate was 70% [6]. One year post-earthquake, 43.3% of adolescents had PTSD and 38.1% had depression [7]. Co-occurrence of PTSD and depression symptoms is around 30% [7, 8]. According to Kawahara et al. [4], PTSD, depression, and anxiety are common in the first months after a disaster, with symptoms potentially persisting for years. PTSD and depression can still be observed in children and adolescents four years post-disaster [9]. Mental health symptoms in adolescents can be 44–104% higher after a disaster, with 56% continuing to experience problems two years later [10]. For example, 24.4% of Tibetan adolescents had symptomatic PTSD three years after the Yushu earthquake [11], and 23.4% still had PTSD 53 months later [12]. Longitudinal studies, such as Okuyama et al. [13], found that while PTSD levels in adolescents decreased over time, depression and anxiety levels remained unchanged over three annual measurements. Shi et al. [14] found similar depression levels in adolescents at the 6th month (27.5%) and the 30th month (27.2%) post-earthquake.

These findings indicate that adolescents are affected not only immediately after a disaster but also in the long term, posing a risk to their mental health. Adolescents are particularly vulnerable due to their developmental stage, underdeveloped cognitive capacities, low adaptation abilities, and significant changes in physical and psychosocial development [15–18]. Traumatic events during this period can harm their functionality and adaptation [7]. Additionally, adolescents may lack knowledge on how to respond to and cope with disasters [6], affecting their adaptation process. Liu et al. [19] found that 31% of adolescents affected by an earthquake showed poor school adaptation. Coping methods significantly impact long-term psychological adaptation to trauma [20]. However, adolescents often use negative coping methods such as problem avoidance, reverie, and self-blame [21]. Problem-focused coping is negatively related to PTSD, while negative coping methods like daydreaming are positively related [15]. In Nepal, adolescents with high PTSD levels tended to pray more but engaged less in joint activities like painting [7]. Negative coping predicts mental health problems, whereas positive coping is protective [9, 11, 19]. Adolescents using negative coping methods show more PTSD symptoms [9, 11].

Therefore, adolescents need psychological help to manage and re-adapt after traumatic experiences. WHO reports that 14% of adolescents worldwide have an existing mental disorder, with half developing by age 14. Post-earthquake, psychological symptoms in school-age adolescents may increase and persist [22]. Despite the need, only 2.7% of adolescents received individual psychological support and 36.7% participated in group support activities after the earthquake [15]. Participation in psychological support activities helps adolescents solve problems and adapt more easily [23, 24]. Literature shows that clinic-based programs are implemented to reduce the psychological symptoms experienced by adolescents after the earthquake. It is stated that these intervention programs are effective in relieving symptoms of PTSD and depression, as well as providing improvements in the resilience levels of adolescents [25–27] Additionally, it was shown that online and face-to-face clinic-based group studies with earthquake-affected people in Turkey contributed to decrease in their anxiety, depression and stress levels and increase in their resilience levels [111]. School-based interventions, in addition to clinic-based ones, reduce suicidal thoughts and anxiety in adolescents [13, 19]. They also improve school adaptation [19] and decrease externalized behaviors like aggression and rule-breaking []. These findings demonstrate that mental health services in both clinics and schools effectively prevent or reduce psychological symptoms post-earthquake and enhance school adaptation. However, sustainable long-term mental health services are crucial for adolescents' recovery [19]. Researchers stress the importance of timely and appropriate intervention by mental health professionals in schools and communities to prevent post-earthquake mental health issues [14, 19, 21].

Structure of Turkish schools and responsibilities of school counselors

There is 12 years of uninterrupted compulsory education in Turkish schools. Education is provided in the form of formal and non-formal education. Formal education is provided regularly in schools for individuals of a certain age group and at the same level, with programs prepared according to a certain purpose. Formal education includes preschool, primary school, secondary school and high school. Schools are places where students are taught social, cultural and spiritual values as well as

academic success. There are three main areas in the education process in schools: teaching, management and student personality services. Student personality services are assistance services aimed at meeting the personal development and realization needs of students. A school psychological counselor has responsibilities in the guidance and psychological counseling service, which is included in student personality services. School counselors conduct preventive and developmental guidance studies (individual counseling, group counseling, psycho-education, etc.) in schools, mostly regarding students' personal, social, academic and career problems. In crisis situations (such as earthquakes), they carry out psychosocial intervention studies for students, teachers and parents.

Current study

When the studies on post-earthquake psychological symptoms are examined, it is seen that most of them focus on PTSD and depression reactions, while other symptoms are addressed in limited studies [19]. Actually, studies suggest that when conducting research with adolescents exposed to natural disasters, not only PTSD but also psychological reactions such as depression, panic, anxiety and aggressive behavior should be examined [29]. This study aims to reveal not only certain symptoms (PTSD, depression) but also a wider range of psychological reactions of adolescents exposed to the earthquakes, both through measurement tools and based on their own phenomenology. Thus, the reactions of adolescents to the earthquake experience will be understood from a broader perspective. Besides, the difficulties faced by adolescents in the re-adaptation process after the earthquake, the methods they use to cope with these difficulties and what they expect from guidance services will be revealed. Therefore, it will give ideas about how school guidance services can make more effective interventions, take precautions in their planning and what points they can focus on in psychological support programs. In addition, the results of this study may provide clues about the psychological reactions of adolescents after not only earthquakes but also other natural disasters. These clues may contribute to the understanding of psychological reactions experienced by adolescents in disaster situations that may occur in other parts of the world. Thus, this study can provide ideas for both mental health professionals and policy makers regarding the protection or improvement of mental health of adolescents in disaster situations. Schools, where adolescents spend most of their daily time, are one of the most important environments for reaching a large part of the population in the country, laying the groundwork for studies on risk factors and protective factors, and improving and protecting mental health [30, 31]. School-based social and emotional learning programs also play an important role in reducing the risk of depression, anxiety, stress, suicide, harmful substance use and preventing antisocial behavior [31]. Studies indicate that psycho education, school-based implementations, and mental health programs are useful in helping adolescents overcome the undesirable effects of negative life events they encounter [30]. However, it is known that psychosocial support provided by teachers who are not mental health experts does not create any change in adolescents' PTSD and depression levels [32]. School guidance services provide a professional service that can improve and protect students' mental health and support them with preventive programs against risk situations that may harm their mental health. Therefore, it is an important question how school guidance services will provide help for students in the post-earthquake period. However, when the literature is examined, there is no study on what kind of programs school counseling services did for adolescents after the earthquake and how aware they were of the difficulties experienced by adolescents. In addition, there are no studies on what long-term programs they planned and how school counselors helped students with their psychological and other difficulties and adaptation process. This study aims to close this gap in literature. In this context, school counselors' awareness of students' problems and on which issues they need support and the plans they intend to make will be revealed. Thus, the situation of school mental health experts regarding post-earthquake programs will be disclosed in detail. This detailed research was conducted in two studies. The first study addressed the difficulties experienced by school counselors and students due to the earthquake. In the second study, the psychological symptoms caused by the earthquake on students were examined. Details of the studies are presented below.

Study 1: Opinions of school counselors and students regarding the difficulties experienced due to the earthquake

The purpose of the first study is to obtain the opinions of school counselors and students about the difficulties they experienced in the post-earthquake period. For this purpose, answers were sought to the following questions: How were students affected by the earthquake? How did they cope? How did school guidance services respond to the effects of the earthquake? Hence, semi-structured interviews were conducted with school psychological counselors and students. In this section, information about the process is given and the results obtained in the study are provided.

Study 2: Effects of the 2023 Kahramanmaraş-centered earthquake on students' mental symptoms

Individuals who lost their homes, jobs, relatives and suffered material and moral damage due to the earthquake

were also negatively affected psychosocially by the earthquake. Although these effects were not very noticeable at first, it was observed that the symptoms gradually began to appear as earthquake victims tried to establish a normal standard of living [33]. Research conducted after traumatic events such as earthquakes and hurricanes indicate that victims experience post-traumatic stress disorder. As a result of not having a healthy mourning process, psychological symptoms such as depression and separation anxiety are experienced [25, 33, 34]. Arslan [35] states that after the earthquake, students were observed to experience situations such as a decrease in learning motivation, fear, anxiety, increased absenteeism and school changes. It is estimated that these situations will cause various mental health problems in high school students in the post-earthquake period. The hypothetical model regarding the relationships between earthquake and psychological symptoms is presented in Fig. 1. In addition, it is predicted that the psychological reactions of adolescents will differ depending on their own characteristics and their characteristics related to the event. Therefore, in Study 1, answers to the following research questions were examined.

1. What is the overall impact of the earthquake on adolescents' symptoms of anxiety, depression, somatization, hostility, and negative self-perception?
2. Do psychological symptoms of adolescents differ depending on their gender?
3. Do psychological symptoms of adolescents differ depending on their injury condition?
4. Do psychological symptoms of adolescents differ depending on the death of one of their relatives?
5. Do adolescents' psychological symptoms differ depending on their change of residence?

Method

Study 1: Method

In line with the aim of the first study, the research method was determined as phenomenological design, which is one of the qualitative research methods. Phenomenological pattern focuses on the meaning, structure and essence of the phenomena that we are aware of but do not have an in-depth and detailed understanding for the individual or group [63]. The difficulties experienced after the earthquake were discussed as a phenomenon and examined in depth from the perspective of school psychological counselors and students. Within the framework of this phenomenon, answers were sought to the following questions: What kind of difficulties did students experience after the earthquake? How did they deal with these challenges? What are students' expectations from Guidance Services? What difficulties did school psychological counselors experience in helping students? What challenges did students need support for? What are the plans of school guidance services for the next term?

Study group

In the study, face-to-face and online interviews were held with ten different students and six different psychological counselors to evaluate the effects of the earthquake. The participants were determined using the criterion sampling method. In this regard, the first criterion is that the participants attend high schools in the earthquake region. In order to obtain more detailed information about the phenomenon examined, data were collected from psychological counselors and students from three different cities in the earthquake region. The second criterion is that psychological counselors work in high schools. Six psychological counselors and ten high school students from different provinces affected by the earthquake participated in the research. Three of the students

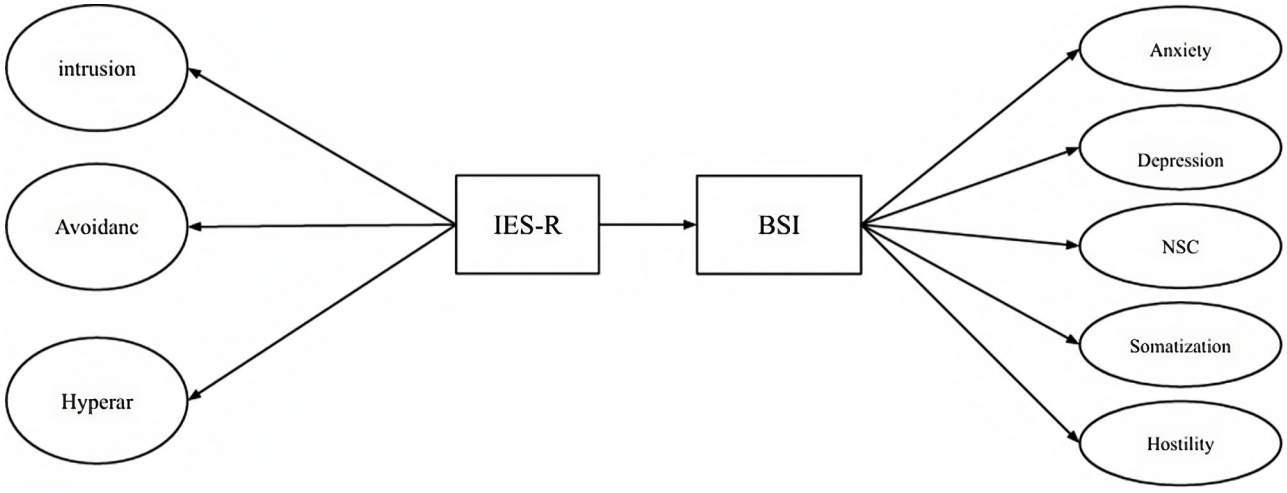

Fig. 1 Schema predicted to show the effect of the event on mental

are boys and seven are girls. Three students (two girls and one boy) are in the 10th grade, five female students are in the 11th grade and two male students are in the 12th grade. 3 of the psychological counselors are women and 3 are men. The professional experience of the psychological counselors varies between 3 and 23 years. The sample size in the study was determined according to data saturation. The researchers concluded that they reached data saturation when they realized that the collected data were repetitive and that no new results were obtained from the data. The exclusion criterion is not being affected by the earthquake.

Data

Data were collected using semi-structured interviews used in qualitative research designs. Student and School Psychological Counselor Semi-Structured Interview Forms were prepared to collect data. In preparing the interview questionnaires, firstly, researchers and field experts were consulted to create a draft form. A pilot administration was carried out after the draft form was reviewed by faculty members in the field of school counseling and experts in qualitative research. The pilot study was conducted by the expert researcher with a psychological counselor and a high school student. With the interview protocol prepared before the interviews, a pilot study was conducted with the student interviewer and the counselor to test the meaning of the questions for the interviewer and the participants. The form was revised by ensuring consistency during the interviews. Sample questions in this interview form are as follows: What difficulties did you experience after the earthquake? (Student question). After the earthquake, on what issues did students mostly apply to the school guidance service, or do you think they will? (Psychological counselor question).

Data collection

Before the interviews were conducted, informed consent forms were obtained from the students, their parents and school psychological counselors. In addition, the questions were sent to the participants for review before the interviews. Appointments were made and interviews were held according to suitable days and times for the participants. Since school attendance was not compulsory after the earthquake, most of the students did not attend school, and therefore some of the interviews were conducted online. The interviews ranged from 8 to 15 min. During the interviews, the statements of the interviewees were repeated and participant approval was obtained again.

Data analysis

The data obtained from the interviews were analyzed in four phases in accordance with the purpose of the research and the determined phenomenological design. These phases consist of [1] coding the data [2], finding themes [3], organizing the codes and themes and [4] defining and interpreting the findings [64]. The data obtained from the interviews were discussed under two main headings: findings regarding the students and findings regarding the school guidance service. The findings about the students were grouped under four headings: the difficulties they experienced after the earthquake, the difficulties experienced with the reopening of schools, methods of coping with these difficulties and expectations from the school guidance service and categories were created for these. The findings regarding the school guidance services were grouped under three headings: the issues that school psychological counselors have difficulty with, the issues on which students need/will need support and the school guidance service's planning for the new period. Categories related to these were created. Then themes and sub-themes were created. In this context, the audio recordings obtained from the interviews were first transcribed and turned into written text by a researcher who is competent and experienced in interview techniques. Before proceeding with the content analysis of the written texts, content analysis was started by ensuring coder reliability between the two researchers determined for content analysis. Codes were created as a result of themes, subthemes and analyses. The obtained codes were examined by the research team, the themes and codes were finalized and the research findings were defined and interpreted. In the findings section, the statements of the students and psychological counselors in the study group were included using pseudonyms. Their real names were not used.

Reliability

In order to ensure reliability in the research, the participants were informed about the purpose of the study and the interview process. Their consent was obtained to indicate that they participated voluntarily. Within the scope of the research, some studies were carried out for consistency and credibility in line with Creswell's [65] recommendations. In order to increase consistency and credibility, a researcher and an expert independently carried out the theme, category, coding and meaning process during the analysis process. In addition, for a rich and detailed description, the participants' statements were transcribed as they were and presented directly in the text in the findings section. Additionally, in order to ensure credibility, after the interviews with the participants, the conversations were transcribed into text and these texts of the interviews were sent to the participants. Mistakes were removed by receiving feedback from the participants regarding the text. Thus, the accuracy and precision of the information was checked. Again, in order

to ensure reliability and confirmability, the interview data were coded into categories and compared with each other by two different researchers.

Study 2: method

Predictive correlational design, one of the quantitative research methods, was used in the research. In predictive correlational design, the relationships between variables are examined and it is aimed to predict one of the variables based on the other [36].

Research sample

The sample size for the first research question was determined based on the opinion that there should be at least five people per parameter, as stated in Brown [37]. Since there were 75 parameters in this research, it was thought that at least 375 participants were required for SEM. For the other research questions, the sample size was determined using the formulas determined in the literature for continuous and discontinuous data [38]. In the current research, the data is continuous and the number of individuals in the universe is unknown formula was used. As a result of the sample size calculation, it was concluded that at least 384 people should be reached. The margin of error for this study was found to be 1.96 with a 5% probability. The frequency of occurrence of the event to be examined was determined as $p = 0.5$ and sampling error $d = 0.05$. Initially, 420 people participated in this research. When the data were examined, it was noticed that seven of the scales were not answered completely. When inappropriate data were removed, the study group was formed from the remaining 413 people, 88 of whom were male (21.3%) and 325 of whom were female (78.7%) high school students. Considering the grade levels, 18 participants (4.4%) were in the preparatory class, 93 participants (22.5%) were in the 9th grade, 86 participants (20.8%) were in the 10th grade, 137 participants (33.2%) were in the 11th grade and 79 participants (19.1%) were in the 12th grade. To the question regarding injuries caused by the earthquake, 10 participants (2.4%) answered yes and 403 participants (97.6%) answered no. Similarly, 112 participants (27.1%) answered yes and 301 participants (72.9%) answered no to the question regarding their moving after the earthquake. Additionally, 74 of the participants (17.9%) stated that they lost their relatives in the earthquake and the remaining 339 (82.1%) stated that they did not experience any loss of relatives in the earthquake. This research data was collected using convenience sampling method. In this type of sampling, voluntary and accessible individuals are included in the study [39]. The characteristics of the sample group in the study are given in Table 1.

Table 1 Characteristics of the sample group

N = 413	Gender		Grade level					Injury in earthquake		Moving		Loss of relative	
	Male	Female	Preparatory	9	10	11	12	Yes	No	Yes	No	Yes	No
n	88	325	18	93	86	137	79	10	403	112	301	74	339
%	21.3	78.7	4.4	22.4	20.8	33.2	19.1	2.4	97.6	27.1	72.9	17.9	82.1

Data collection tools

Personal information form

It was created by the researchers to find out the gender and grade levels of the students in the study group, whether they were injured, whether they moved and whether they experienced the loss of a loved one due to the earthquake.

Brief symptom inventory

The scale, developed by Derogatis [40], is a 53-item self-assessment inventory. Its Turkish adaptation was performed by Şahin and Durak [41] in three studies, with Şahin et al. [42] validating its use for adolescents. The scale comprises five sub-dimensions: depression, anxiety, negative self, somatization, and hostility, each with 53 items. Cronbach's Alpha coefficients for the sub-dimensions were: depression (α = 0.88), anxiety (α = 0.84), negative self (α = 0.74), somatization (α = 0.70), and hostility (α = 0.73). Responses are measured on a five-point Likert scale from 0 (not at all) to 4 (very much). In the current study, Cronbach's Alpha values were: depression (α = 0.92), anxiety (α = 0.92), negative self (α = 0.91), somatization (α = 0.92), and hostility (α = 0.92).

Impact of event Scale-R

Weiss and Marmar [43] developed the Impact of Events Scale (IES) as a post-traumatic stress measurement tool, with Turkish validity and reliability established by Çorapçıoğlu et al. [44]. The 22-item scale, scored on a five-point scale (0–4), assesses the impact over the past 7 days. It includes three subscales: re-experiencing (items 1, 2, 3, 6, 9, 14, 16, 20), avoidance (items 5, 7, 8, 11, 12, 13, 17, 22), and hyperarousal (items 4, 10, 15, 18, 19, 21). In this study, Cronbach's Alpha values were: re-experiencing (α = 0.93), avoidance (α = 0.94), and hyperarousal (α = 0.92).

Data collection process

Ethics committee permissions for this research were obtained from the relevant university. The demographic information form prepared by the researchers and the scales used were administered both via Google Forms and face to face. This study was conducted between 31 May and 16 June 2023. The scales were sent to four different types of high schools and private education institutions representing Gaziantep province and districts. It was stated that there were 4950 students in these institutions. However, since the number of students attending school was very low ($N = 48$) due to the earthquake, most of the data were collected online ($N = 372$). Therefore, data were obtained from a total of 420 students through online and face-to-face methods.

Data analysis

In this research, analyses were conducted using SPSS 22.0 and Mplus programs. SEM was created to answer the first question of the research. The information obtained via this model is given in Fig. 2. Skewness and Kurtosis values were examined for the multivariate normality assumption. If the skewness coefficient values are in the range of (Skewness = x, $-1 < x < +1$), it can be said that the scores show normal distribution [38]. It was found that the skewness values examined in this study showed normal distribution between +0.21 (depression) and +0.93

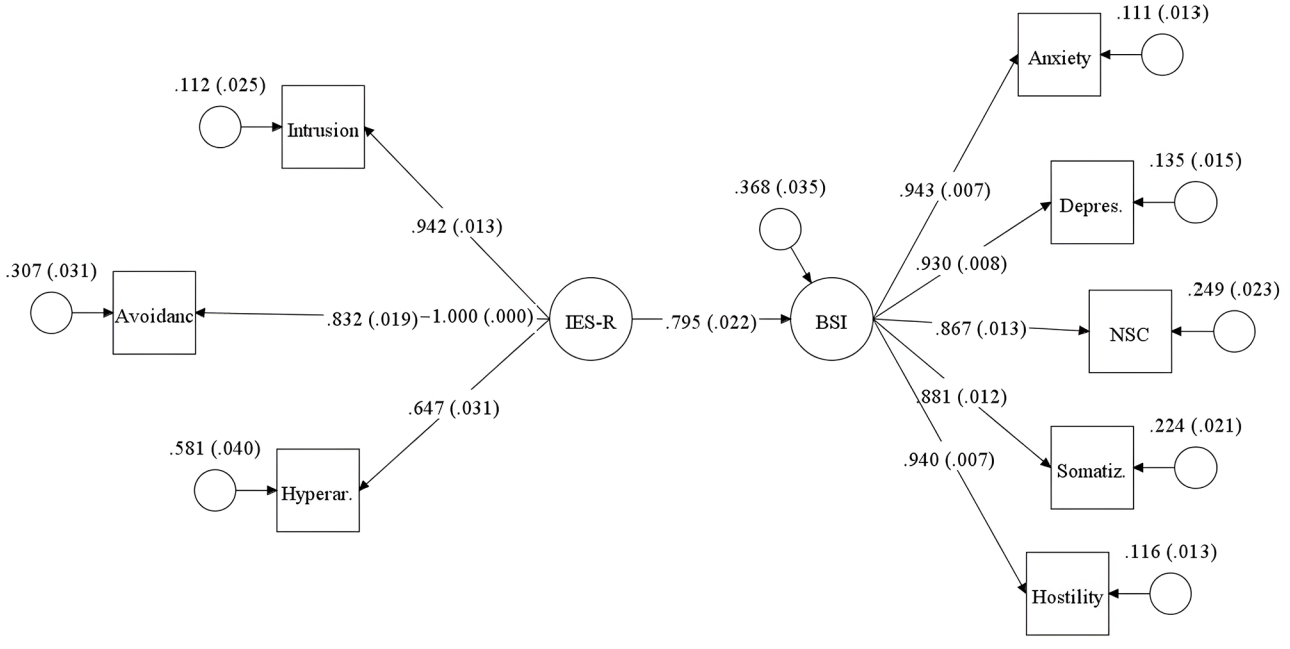

Fig. 2 Structural equation model showing the effect of the impact of events scores on mental symptoms

(somatization) for all variables. We used the values for the $\chi 2$ ($p > 0.05$), CFI > 0.90, TLI > 0.90, SRMR < 0.08, and RMSEA < 0.08 representing an acceptable model fit [45].

In order to answer the other questions of the research, one-way multivariate ANOVA (MANOVA) analysis was conducted. The independent variables examined within the scope of this research question were determined as gender, injury in the earthquake, loss of a loved one and moving after the earthquake. The dependent variables were the impact of events, depression, anxiety, negative self, somatization and hostility. Since all the independent variables were dichotomous, no post-hoc analysis was performed. The results with significant differences were compared and examined.

Findings

Findings of study 1

This section includes findings regarding the views of the school psychological counselors and the students on the difficulties they experienced in the post-earthquake period.

Findings regarding students

Difficulties experienced by students after the earthquake

According to the findings obtained from the students, the difficulties experienced by the students are divided into themes related to academic, psychological, social, emotional and physiological difficulties.

Academic difficulties As a result of the interviews conducted with the students, it was concluded that one of the difficulties experienced by the students was educational difficulties. The codes under this theme are: not being able to focus on classes, class anxiety, anxiety about not being able to complete classes. In this process, it was determined that the students could not start their desired lesson routines even though schools were opened. A student who participated in the study summarized the difficulty as follows: *"We are far behind in lessons. Our education was previously interrupted due to the COVID-19 epidemic and with the earthquake, we fell further behind."* (Ayşe, 11th grade student). In addition, it was inferred that most of the students could not focus on lessons because they were constantly worried about an earthquake. One participant expressed the difficulty he experienced as follows: *"I had a lot of academic difficulties. My classes were not very good before the earthquake. I was just about to start to study, but when the earthquake happened, I stopped studying completely."* (Kerem, 12th grade student).

Psychological difficulties Psychological Difficulties: It was observed that the students developed fear of being alone, fear of losing their loved ones and fear of being in the dark and in closed spaces after the earthquake. In addition, it was determined that concerns about the earthquake occurring again and as a result of these, feelings such as sadness and anxiety developed. In this context, it was inferred that the students were especially worried about the earthquake happening again and therefore experienced emotional difficulties. Regarding the psychological difficulty, one student stated the following: *"I was worried about another earthquake. I had difficulty in falling asleep. I experienced fear of losing my loved ones and as a result, I developed a constant feeling of crying."* (Merve, 11th grade student). Another student expressed the following: *"I have a fear of closed spaces. I can't get into the elevator. I try to calm myself down but it doesn't help."* (Ayşe, 11th grade student). One student conveyed that *"Even during a shake, we were trying to run away screaming. This affected me psychologically a lot."* (Kemal, 12th grade student). Another participant said that *"I couldn't sleep wondering if there would be an earthquake. We tried to sleep in the car but that didn't work either. We were constantly afraid of an earthquake and we were anxious."* (Kerem, 12th grade student). Another student who expressed her anxiety and concern expressed that *"Worrying if there will be an earthquake again. After the earthquake, we had difficulty in being in closed areas. I started to panic. I experienced shortness of breath etc. I was afraid that my family and relatives would be harmed. I was always worried about what would happen to my family rather than myself."* (Ayşe, 11th grade student).

Social difficulties One of the difficulties that students experienced after the earthquake was the loss they experienced. It was also concluded that they had difficulty communicating with their friends, teachers and relatives and meeting them whenever they wanted due to being separated from them for a long time. One participant stated that *"I needed to socialize very much. I was bored at home and wanted to do something. I needed to talk about what I was going through."* (Ayşe, 11th grade student). Another participant expressed the difficulty she experienced as follows: *"I lost a lot of close friends and that's why I was very affected. On the other hand, I could not meet my other friends face to face for a long time."* (Reyhan, 11th grade student).

Physiological difficulties It was seen that the students experienced problems such as accommodation, nutrition and sleep after the earthquake. Not being able to enter the house, having difficulty finding food and not being able to sleep due to fear of an earthquake at any time were the most emphasized difficulties. In this regard, a student expressed her experiences as follows: *"Our lives have changed in every sense. I still don't have a sleep pattern. I keep watch at night and sleep during the day. This*

caused me to be worn out both physically and academically." (Gizem, 10th grade student).

Difficulties experienced by students after schools opened

Academic and psychological themes come to the fore among the difficulties experienced by the students with the reopening of schools after the earthquake.

Academic Difficulties: It was determined that after the reopening of schools, the students did not go to school much due to the removal of compulsory school attendance and therefore education did not continue in schools. The students stated that they had problems focusing, could not attend their classes and experienced learning losses during this period. One of these students expressed the difficulty he experienced as follows: *"We couldn't have lessons because my friends didn't come to school regularly. Opening schools was not productive at all."* (Kerem, 12th grade student). Another participant said that *"When schools first opened, I could not focus much on lessons because I was worried about an earthquake."* (Merve, 11th grade student). Another student said that *"I had a hard time concentrating on lessons"* (Veli, 10th grade student).

Psychological difficulties It was concluded that after the reopening of schools, the students initially experienced anxiety and fear, which made it difficult for them to adapt to school. One student expressed the difficulty she experienced as follows: *"My anxiety was increasing because I always had the fear of earthquakes in my mind. This made it difficult for me to focus on school and lessons."* (Nilay, 11th grade student). Similarly, another student stated that *"I always had the fear of earthquakes in my mind. I was worried if I was shaking or if something would happen."* (Gizem, 10th grade student). A student who experienced the loss of a friend said that *"My friend's death in the earthquake made it difficult for me to emotionally adapt to school."* (Reyhan, 11th grade student).

Students' methods of coping with difficulties

The students' coping methods regarding the difficulties they have experienced are divided into two themes: environmental support and optimism.

Environmental support The participants regarded the support they received from their family, teachers and friends as a way of coping with the difficulties they experienced due to the earthquake or during the recovery process. During this process, it was observed that the support received especially from the family was much greater and played an important role in the recovery of the students. Additionally, talking to friends who had the same experience helped the students feel good. In this context, a student said that *"In this process, the warm family environment was very effective in helping me cope with the difficulties"* (Kemal, 12th grade student). Another student said that *"I got support from my family and my teachers told us what we should and should not do during this process. Also, the more I talked to my friends, the more relaxed I became."* (Ayşe, 11th grade student).

Optimism It was determined that the students' thoughts played an important role in overcoming the difficulties they experienced. Positive thinking and optimistic perspectives played an effective role in the students' recovery during this process. A student who used the positive thinking method stated that *"My belief that everything would be fine made me feel good."* (Nimet, 10th grade student). Similarly, another student said that *"I started thinking optimistically and tried to get used to it."* (Fatma, 10th grade student). Another student expressed that *"I felt luckier because I had friends who were in worse situations than me. Thinking like this, I relaxed myself in this way."*(Reyhan, 11th grade student).

Students' expectations from guidance service

It was concluded that the students had various expectations from school and psychological counselors after the earthquake. In this context, expectations regarding psychological support and academic support were seen to be at the forefront. In this context, expectations regarding psychological support and academic support were found to be more important for the students.

Expectations regarding psychological support Some students stated that they could not get enough help from the guidance service after the earthquake. It was understood that some students did not need guidance services in schools that implemented post-earthquake psychoeducation programs. It was inferred that the expectations of the students who contacted the guidance services were met. In this regard, a student stated that *"Talking to my friends and teachers was good for me. There was no need for the school guidance service. However, the post-earthquake intervention program implemented in my school gave me great relief."* (Nilay, 11th grade student). Another student expressed that *"The guidance service should have taught us how to cope in that chaotic environment during the earthquake. I would like to get more help regarding the earthquake; it would have a great impact."* (Kerem, 12th grade student). Another student expressed his unmet expectation as follows: *"Before the earthquake, activities such as breathing exercises were being carried out for exam anxiety. I expected something like that, but they did not do it. There was more anxiety, especially when school first opened. It would have been good for them to hold such events at that time."* (Kemal, 12th grade student). However, a student who thought that her expectations were

met said that *"Even talking to the psychological counselor was good for me and met my expectations."* (Nimet, 10th grade student).

Expectations regarding academic support One of the things students needed after the earthquake was academic support. In this respect, it was concluded that they felt the need for issues such as compensation for learning losses, effective study and preparation for exams. One student expressed her expectation for academic support as follows: *"I expected the guidance service to help with studying regularly, completing learning gaps and preparation for exams. This expectation was met."* (Fatma, 10th grade student). Another student expressed his educational needs and the level of satisfaction as follows: *"The reason for asking for support from the guidance service was to attend the lessons, watch, follow up, and see what was not done. It was also about planning the time. My expectations regarding these were met."* (Veli, 10th grade student).

Findings regarding school guidance service

Findings about the issues that psychological counselors have difficulty in helping the students with, the issues that the students need support for and how the school guidance service will plan the new term are presented in this section.

Issues that school psychological counselors have difficulty with

After the earthquake, it was determined that school psychological counselors had difficulties in various issues while helping the students with the difficulties they experienced. Among these difficulties, the themes of loss and mourning experienced by the students and absenteeism come to the fore.

Loss and mourning School psychological counselors stated that the most difficult issue in their interviews with students was traumatic events such as loss and mourning. They signified that it was difficult to interview the students who experienced loss. For example, a psychological counselor expressed the situation she was having difficulty with as follows: *"I had a particularly difficult time with the students who had lost someone very close to them or with students who were experiencing very intense feelings of grief due to the disaster."* (Ayfer, 3 years of experience). Another psychological counselor stated the following in a similar way: *"Almost all of my students had lost friends and they were all sad in this regard. So was I. They all had a sense of fear and helplessness. I tried to draw their attention to the lesson, but I had a hard time."* (Kaan, 12 years of experience).

Absenteeism One of the issues that school counselors struggled with was that the students did not come to school regularly. Schools were opened after the earthquake, but it was determined that most of the students did not go to school because attendance was not compulsory and therefore guidance services had difficulties in reaching students. A psychological counselor expressed the difficulty he experienced in this regard as follows: *"At this point, the issue we had the most difficulty with was the students not attending school. We had difficulty reaching them. It would have been easier if the students had come to school regularly."* (Selim, 23 years of experience).

Issues for which students need/will need support

In the interviews with school psychological counselors, it was emphasized that there were various issues that the students needed support for after schools reopened after the earthquake. Two themes came to the fore: psychological and academic issues.

Psychological issues In the interviews with psychological counselors, the students stated that they mainly experienced emotions such as fear, stress and resentment. In this context, it was inferred that the students would need help, especially in matters such as coping with stress and coping with difficult life events. For example, a psychological counselor stated the following regarding the emotions experienced by the students: *"It was observed that they had difficulties such as not being able to be alone, fear of dark and not being able to go to the next room alone."* (Süleyman, 16 years of experience). Another psychological counselor stated the following about the issues students will need: *"Students may need help with issues such as coping with stress, depending on their recovery status after the earthquake."* (Selim, 23 years of experience).

Academic issues It was determined that after the earthquake, the students experienced difficulties such as learning losses, exam stress and not being able to focus on classes. A psychological counselor stated the following about the issues that students will need: *"Since they will focus on learning losses, they will visit us mostly about the problems they experience regarding studying, exams and exam preparation."* (Meryem, 11 years of experience). Similarly, another psychological counselor said that *"Especially after the earthquake, the biggest problem was stopping studying and not being able to focus on lessons. In the past, this problem used to be very rare, but after this process, it started to happen more."* (Selim, 23 years of experience).

Planning of school guidance services for the new term

It seen that school psychological counselors will focus on emotional and educational issues in their planning when

schools open in the new term. Two themes, psychological issues and educational issues, came to the fore in the planning regarding the needs that emerged after the earthquake.

Psychological issues In the interviews, they stated that they would focus on helping students with issues such as anxiety, fear, stress disorder, loss and mourning that emerged after the earthquake. In this sense, a psychological counselor expressed that *"I am thinking of including individual or group interviews about the trauma and loss experienced after the earthquake."* (Meryem, 11 years of experience). Another psychological counselor stated that *"I am thinking of focusing on activities aimed at emotional strengthening of students."* (Canan, 8 years of experience). Another psychological counselor also expressed *that "I am thinking of giving priority to psychological resilience and post-traumatic stress disorder issues in the annual plan."* (Kaan, 12 years of experience).

Educational issues In the interviews with psychological counselors, it was concluded that various learning losses occurred in students after the earthquake. Since deficiencies may arise in issues such as exam stress, career choice and exam preparation, they were considering making plans regarding these issues in the new period. A psychological counselor expressed his planning for the new term as follows: *"I am planning to include educational topics such as exam stress and study methods in the next term."* (Selim, 23 years of experience). Another psychological counselor expressed his planning for the new period as follows: *"I am thinking of focusing more on taking action, focusing, setting goals and working on them."* (Ayfer, 3 years of experience).

Findings of study 2

In this section of the study, findings on the effects of the earthquake on students' psychological symptoms are presented.

Descriptive information (correlation, mean, standard deviation and Cronbach's Alpha) regarding the scales used in this study were analyzed and given in Table 2.

SEM analysis was conducted to answer the first question of the research. The fit indices of the tested model were found as χ 2 [19] = 49.06, $p < 0.00$, $\chi 2/df = 2.58$, CFI = 0.99, TLI = 0.98, RMSEA = 0.06 (90% CI = 0.041–0.083) and SRMR = 0.01. The fit indices of the hypothesized model show that the model has a strong fit. It is seen that all the regression values between the variables are significant ($p < 0.05$). The results point out that the impact of events, that is, the earthquake, has a strong and direct impact on the measured symptoms (0.79). This result means that as the impact of events scores increase, the psychological symptom scores also enhance. In addition, according to the IES-R total scores, it is seen that 43.3% of the participants scored 37 and above. In addition, it is inferred that IES-R scores have a total effect of 0.67 on anxiety, 0.69 on depression, 0.68 on negative self-concept, 0.68 on somatization and 0.63 on hostility scores. In other words, the earthquake experienced by the participants has a high impact on their psychological symptoms.

One-way MANOVA analysis was conducted to answer the other questions of the study. Through this analysis, the effects of gender, injury in the earthquake, loss of a loved one and moving after the earthquake on the variables of depression, negative self-concept, somatization, hostility and the impact of events were examined. In this study, the alpha significance level was determined as 0.05. When the assumptions of homogeneity of covariance were examined, it was seen that the assumption was met for the variables of injury in the earthquake (Box's M = 1.05, $p > 0.05$), loss of a loved one (Box's M = 1.08, $p > 0.05$) and moving after the earthquake (Box's M = 1.12, $p > 0.05$). However, it was not met for gender (Box's M = 2.00, $p < 0.05$). Therefore, in the analysis of the dependent variable, it was reported based on Pillai's Trace test results instead of Wilks' lambda because Pillai's Trace is more reliable than other statistics against violations

Table 2 Correlation, Mean, Standard Deviation and reliability coefficient values of the scores between the impact of events and psychological symptom variables

	1.	2.	3.	4.	5.	6.
1. Anxiety	1.000					
2. Depression	0.874*	1.000				
3. Somatization	0.818*	0.794*	1.000			
4. Hostility	0.839*	0.811*	0.788*	1.000		
5. Negative self	0.890*	0.884*	0.801*	0.816*	1.000	
6. Impact of events (Earthquake)	0.677*	0.692*	0.688*	0.638*	0.685*	1.000
M	17.59	20.21	9.12	8.56	15.70	32.62
SD	12.2	11.7	7.0	5.7	10.1	18.7
α	0.92	0.92	0.92	0.92	0.91	0.94

*$p < 0.05$

Table 3 Descriptive statistical data of participants and results of tests of between-subjects effects based on gender variable

Variable	Gender	M	SD	*N*	Levene Statistic	SD	MS	F	*p*	η2
Anxiety	Female	18.52	12.09	325	0.00	1	1334.45	9.05	0.003	0.022
	Male	14.13	12.30	88						
Depression	Female	21.57	11.39	325	0.00	1	2797.93	21.44	0.000	0.050
	Male	15.21	11.53	88						
Somatization	Female	9.77	6.95	325	0.20	1	632.54	13.26	0.000	0.031
	Male	6.75	6.70	88						
Hostility	Female	9.01	5.83	325	1.01	1	299.74	9.11	0.003	0.022
	Male	6.93	5.36	88						
Negative self	Female	16.61	9.98	325	0.09	1	1280.58	12.88	0.000	0.030
	Male	12.31	9.88	88						
Impact of events	Female	35.49	17.96	325	0.12	1	12617,826	39,094	0.000	0.087
	Male	22.00	17.95	88						

Table 4 Descriptive statistical data of participants and results of tests of between-subjects effects based on Injury in the Earthquake Variable

Variable	Injury in earthquake	M	SD	*N*	Levene Statistic	SD	MS	F	*p*	η2
Anxiety	Yes	20.90	8.42	10	3.10	1	112.22	0.74	0.388	0.002
	No	17.50	12.33	403						
Depression	Yes	23.20	9.49	10	1.10	1	91.13	0.66	0.415	0.002
	No	20.14	11.75	403						
Somatization	Yes	12.10	7.34	10	0.16	1	90.50	1.84	0.175	0.004
	No	9.05	6.99	403						
Hostility	Yes	9.40	4.94	10	0.38	1	7.07	0.21	0.647	0.001
	No	8.54	5.81	403						
Negative self	Yes	20.00	9.56	10	0.00	1	189.29	1.85	0.174	0.004
	No	15.59	10.11	403						
Impact of events	Yes	37.10	16.95	10	1.35	1	205.47	0.58	0.446	0.001
	No	32.51	18.82	403						

of model assumptions [46]. In addition, based on Levene Statistics results regarding the gender variable, the assumption of equality of variances was met ($p > 0.05$).

A statistically significant effect was determined between gender and six variables (Pillai's $V = 0.10$, $F_{(6,406)} = 8.29$, $p < 0.05$). 11% of the variance in the model was explained by the dependent variables combined by gender, resulting in a small effect. When the effects between the subjects were examined, it was determined that there was a statistically significant difference between the groups in terms of the variables of anxiety, depression, negative self-concept, somatization, hostility and the impact of events. There were statistically significant differences between the male and the female subjects through all the independent variables. Based on these results, the estimated marginal means were reviewed (Table 3) and found that the female high school students had higher scores than the male high school students on all the variables.

No significant effect was determined between earthquake injury and the six variables ($\lambda = 0.98$, $F(6,406) = 0.78$, $p > 0.05$). When Levene Statistics results were examined, the assumption regarding the equality of variances of all the variables was met ($p > 0.05$). Accordingly, when the effects between the subjects were examined, it was concluded that there was no statistically significant difference between the groups in terms of the variables of anxiety, depression, negative self-concept, somatization, hostility and the impact of events (Table 4).

A significant effect was found between the loss of relatives in the earthquake and six variables ($\lambda = 0{,}96$, $F_{(6,406)} = 2{,}70$, $p < 0.05$), (Pillai's $V = 0.03$, $F_{(6,406)} = 2.70$, $p < 0.05$). Additionally, Levene Statistic results show that the variances of all the variables are equally distributed ($p > 0.05$). As a result, when the effects between the subjects were examined, it was inferred that there was a statistically significant difference between the groups in terms of the variables of anxiety, depression, negative self-concept, hostility and the impact of events. However, it was determined that there was no statistically significant difference between the groups in terms of somatization (Table 5). Based on these results, when the students' averages related to the variables were reviewed, it was

Table 5 Descriptive statistical data of participants and results of tests of between-subjects effects based on the Variable of losing a loved one in the earthquake

Variable	Loss of relative in earthquake	M	SD	N	Levene Statistic	SD	MS	F	*p*	η2
Anxiety	Yes	21.16	12.49	74	.72	1	1149.87	7.77	.006	.019
	No	16.81	12.08	339						
Depression	Yes	23.09	11.74	74	.32	1	746.04	5.50	.019	.013
	No	19.59	11.61	339						
Somatization	Yes	10.33	6.97	74	.65	1	131.88	2.69	.101	.007
	No	8.86	6.99	339						
Hostility	Yes	10.25	5.16	74	1.03	1	256.80	7.78	.006	.019
	No	8.20	5.86	339						
Negative self	Yes	18.08	10.34	74	.61	1	510.19	5.04	.025	.012
	No	15.18	9.99	339						
Impact of events	Yes	38.94	19.17	74	.22	1	3605.12	10.45	.001	.025
	No	31.24	18.43	339						

Table 6 Descriptive statistical data of participants and results of tests of between-subjects effects based on moving after the earthquake

Variable	Moving	M	SD	*N*	Levene Statistic	SD	MS	F	*p*	η2
Anxiety	Yes	18.38	11.53	112	3.50	1	96.67	0.64	0.423	0.002
	No	17.29	12.52	301						
Depression	Yes	21.83	11.20	112	1.63	1	399.54	2.93	0.088	0.007
	No	19.61	11.84	301						
Somatization	Yes	10.10	7.10	112	0.00	1	147.23	3.01	0.083	0.007
	No	8.76	6.94	301						
Hostility	Yes	9.25	5.83	112	0.02	1	71.26	2.13	0.145	0.005
	No	8.31	5.76	301						
Negative self	Yes	16.65	9.98	112	0.70	1	138.57	1.35	0.245	0.003
	No	15.34	10.14	301						
Impact of events	Yes	37.35	17.46	112	1.79	1	3445.221	9.98	0.002	0.024
	No	30.86	18.96	301						

seen that the students injured in the earthquake received higher scores in all the variables except somatization.

A significant effect was found between moving due to the earthquake and the six variables ($\lambda = 0{,}96$, $F_{(6,406)} = 2.56$, $p < 0.05$), (Pillai's $V = 0.37$, $F_{(6,406)} = 2.56$, $p < 0.05$). Levene Statistics results show that the variances of all the variables are equally distributed ($p > 0.05$). Consequently, when the effects between the subjects were examined, it was determined that there was no statistically significant difference between the groups in terms of anxiety, depression, negative self-concept and hostility variables. However, it was concluded that there was a statistically significant difference between the groups in terms of the impact of events variable (Table 6). This result pointed out that the students who moved from the city after the earthquake received higher scores in the dimension of being affected by the event.

Discussion

Discussion of study 1

Discussion of findings regarding students

According to the research findings, the students experienced academic, psychological, social and physiological difficulties after the earthquake. They had more academic and psychological difficulties after schools reopened. The students cope with the difficulties they experience with an optimistic perspective and social support. The research findings indicate that the students developed fear of being alone, losing their loved ones and fear of darkness and closed spaces in the post-earthquake period. It was determined that the students had difficulty in entering their schools, experienced insomnia and feelings such as anxiety and sadness due to the difficulties they experienced. These findings are similar to previous research findings. After earthquakes in different parts of the world, adolescents experience depression, fear, anxiety, anger, restlessness [3, 66, 67], insomnia [68, 69], fear of losing their loved ones and anxiety about the collapse of their homes [70], concentration problems,

forgetfulness, meaninglessness and anxiety about the future [71]. It is inferred that the difficulties experienced by the students after the earthquake continued with the reopening of schools after a one and a half month break. The students pointed out that they had difficulty paying attention to lessons due to anxiety and fear of a new earthquake, especially when schools reopened. Traumas not only harm students' psychological health, but can also affect their academic success because it causes a stress response that hinders learning [72].

In this study, students stated that they experienced academic difficulties such as learning losses, exam and course anxiety. This result is similar to the findings of studies conducted in different countries. For example, after the earthquake, students experienced concentration problems [73, 74] and decreased academic success [75, 76]. Motivation for school and lessons dropped, absenteeism increased [35], on-time graduation rates fell, and dropout rates rose [77]. Other natural disasters also impact academics: floods in Thailand and hurricanes in North Carolina negatively affected students' success [78, 79], and headaches post-Hurricane Sandy led to decreased academic motivation [80]. These findings indicate that natural disasters negatively affect students' education. School closures for safety reasons post-earthquake led to over a month of suspended classes in some provinces [81], resulting in no attendance requirements. This caused learning losses and increased concerns about academic deficiencies. Students also reported difficulties in communication and meeting friends and teachers. Long school closures pose academic, psychological, and social risks [82], and while safety measures are necessary, not attending school can threaten students' mental health [83]. For instance, even with temporary schools established quickly post-earthquake in Iran, students lost interest in school and lessons [84].

It is seen that these difficulties also occur in other geographies where earthquakes occurred. In a study in Nepal, participants stated that they could not meet their basic needs after the earthquake, could not go to school and could not receive the education they wanted due to financial losses [85]. If all these difficulties seen in students after the earthquake cannot be dealt with effectively, the risk of students dropping out of school may arise [86]. For this reason, it is of great importance to provide appropriate intervention methods or individual mental health services without delay, taking into account the difficulties experienced by students.

Students coped with difficulties through environmental support and an optimistic perspective, highlighting emotional support from families and talking to friends with similar experiences. Studies, such as Zijlstra et al. [69], show that adolescents use similar coping methods, receiving support from parents and sharing feelings. Social support acts as a problem- and emotion-focused coping strategy, alleviating stress and mitigating negative effects [87, 88]. However, the earthquake disrupted social support resources, making it difficult for students to find friends to share their problems with, especially during school breaks. Loss of social ties due to friends' deaths further hampered their coping abilities [89]. Thus, closing schools can be a risk factor as it removes an essential support system. Optimism also helped students cope, providing relief by viewing their situation as temporary and considering those worse off. Optimists generally show higher well-being and resilience in stressful situations like earthquakes [90, 91]. Research indicates that optimism reduces psychological symptoms from earthquakes [92], fosters resilience against trauma [93], and leads to better mental health outcomes [94].

Discussion regarding guidance service findings

According to the research findings, the students' expectations from school guidance services were related to the difficulties (psychological and academic) due to the earthquake. School psychological counselors state that students need or may need guidance on psychological and academic issues. School psychological counselors signify that they will mainly include studies related to the psychological and academic difficulties experienced after the earthquake in their guidance planning for the next period. They stated that they had difficulties helping students, especially regarding loss, mourning and absenteeism. It seems that the students' expectations from guidance services are related to the difficulties they have experienced. They express that they need help on how to cope with the anxiety and fear created by the situation they are in. In addition, they emphasize that they need guidance services on issues such as learning losses caused by the earthquake and effective studying. In the interviews with school psychological counselors, they stated that the students needed or would need psychological (skills to cope with fear, anxiety) and academic (learning losses, inability to focus on lessons) support. Findings show that psychological counselors can accurately identify the students' difficulties and expectations. The Turkish Ministry of National Education launched "Psychosocial Support Education Programs" coordinated by school psychological counselors across the country in order to help students overcome the difficulties they experienced after the earthquake in schools and to re-establish their post-earthquake adaptation [95]. The aims of these programs were to provide students with coping skills, increase motivation in academic subjects, and help students express emotions and set goals. Some of the students who participated in the relevant program stated that they did not need guidance services and felt relieved as a result of this program. Actually, it is known

that adolescents who participate in post-crisis psychological support activities can solve their problems effectively and adapt to daily life more easily [23, 24, 30, 96]. Therefore, psychosocial support programs conducted in schools may have helped students overcome the psychological and educational difficulties they experienced. In schools where these studies were not carried out or were carried out incompletely, students may have continued to experience psychological and academic difficulties and they may have needed psychological counselors more to cope with them. In addition, some students stated that they needed guidance service to cope with the intense stress they experienced, but they could not receive any help. This situation can be explained by the students' lack of help-seeking behavior. As a matter of fact, study findings show that adolescents' behavior in seeking professional help for the problems they experience is quite low [97]. Stigma is cited as one of the reasons why help-seeking behavior is low among students [98, 99]. The stigma imposed by society on the person seeking psychological help reduces the likelihood of people seeking help [98]. Therefore, students may need to be supported by school guidance services so that they are aware of the psychological help resources available around them and are open to seeking psychological help regardless of social judgments [100]. According to the research findings, school psychological counselors express that when the new academic year begins, they will focus on anxiety, fear, loss and mourning, which are the psychological effects of the earthquake. In addition, it is stated that studies will be carried out focusing on the learning losses that occurred after the earthquake and the increase in concerns about exam preparation. It is important that psychological counselors' future plans coincide with student needs and expectations. It is known that students are affected emotionally, psychologically and academically after the earthquake [3, 69, 70]. Hence, planning intervention programs for students' difficulties and needs is essential. Literature shows various programs have been developed to reduce psychological symptoms and re-adaptation risks in children and adolescents after earthquakes [19, 27], effectively preventing future mental health disorders [95, 101]. School psychological counselors' planned programs can help reduce students' psychological symptoms and improve coping mechanisms. Studies indicate that adolescents with lower resilience levels experience higher PTSD symptoms and sleep problems [46]. Counselors also plan to support educational issues such as addressing learning losses, refocusing on lessons, setting goals, and exam preparation. Post-earthquake, students often show decreased school success [75], increased academic burnout, reduced self-efficacy [102], loss of motivation, and higher absenteeism [35]. Given these educational needs, such planning is appropriate. Counselors reported difficulties in assisting students with loss and mourning, with 18% of students stating they lost someone close in the earthquake. Therefore, it is clear that these students, whose relatives have died and are in the mourning process, need support to go through a healthy mourning process. Although school psychological counselors struggled to provide mental health services for students, they were also affected by the earthquake. This may make the services provided by school counselors difficult. Actually, adults, like young people, experience symptoms such as depression, anxiety, and PTSD [103, 104] after the earthquake. Also, it is known that they have difficulties in the process of re-adapting to life because they lost their relatives [105]. Besides, when studies on mental health professionals who actively worked during the earthquake process are examined, it is seen that they experience PTSD, depression, burnout, and deterioration in quality of life [113]. This situation shows that the difficulties experienced by psychological counselors who are also mental health experts may affect the services they provide for students. Evidently, psychological counselors being affected by an earthquake may affect the services they provide for students. When a counselor deals with his or her own personal challenges or struggles with the effects of a traumatic event, it can negatively impact his or her professional performance. However, this always depends on how well personal and professional boundaries are maintained and how much importance the consultant attaches to his or her support system and professional development.

Despite all these experiences, school counselors strive to provide guidance services for students. However, while providing this service, their own lives may also be disclosed due to the effects of their own losses. This may disrupt or complicate the service they provide. Traumas affect not only students' psychological health but also their school life [71]. In this study, school counselors stated that students did not come to school regularly and therefore they were unable to initiate appropriate assistance services. Following the decision of the Ministry of National Education, compulsory attendance in schools in the earthquake region was suspended for a certain period. For this reason, a significant number of students never went to school or did not attend classes regularly. Due to this situation, school psychological counselors may have limited their services only to students who came to school. In order to overcome this problem, school psychological counselors could provide guidance services via remote access methods, as in the Covid 19 period [106, 107]. However, in order to provide this service, each student must access the internet and have devices such as a computer, tablet or mobile phone. Considering the destructiveness of the earthquake and the

damage it left on the infrastructure, providing guidance services via remote access may also be challenging.

Discussion of study 2

The general purpose of Study 2 was to examine the effects of two devastating earthquakes on students three months after they happened. The findings point out that a great number of the students were deeply affected by the earthquakes and this situation led to important psychological symptoms. According to the findings, 43.3% of the students received a score of 37 or above on the impact of event scale. This result means that a great number of the students were seriously affected by the earthquakes [47]. Research shows that natural disasters such as earthquakes are a serious risk factor that creates stress in individuals [6, 10, 48]. In fact, this risk is associated with adolescents exhibiting various psychological symptoms (such as PTSD, depression, anxiety) [13, 14, 49]. Also, studies show that the effects on adolescents continue even though more than a year has passed since the earthquake [8, 12]. It can be said that this conclusion results from the fact that there were two earthquakes with a magnitude above 7 in the region, thousands of people were injured, their houses were damaged or destroyed, their relatives died and thousands of aftershocks occurred. Research shows that adolescents exposed to direct effects of earthquakes, such as death, injury and economic loss, may be at greater risk of psychopathology [112]. Other studies also reveal that the severity of the earthquake, proximity to the epicenter, death of a relative, and being injured increase adolescents' PTSD and depression symptoms [15, 49].

One of the important aims of this study is to understand the impact of the earthquakes on adolescents cross-sectionally. Results show significant positive relationships between earthquake impact and anxiety, depression, somatization, hostility, and negative self-perception. As earthquake impact increases, psychological symptoms in students are triggered. Supporting this, other studies report a 44–104% increase in psychological symptoms post-disaster [10]. For instance, adolescents exposed to tsunamis experienced distress, PTSD, depression, and suicidal thoughts [50]. Hardin et al. [17] found that higher disaster exposure correlates with increased anger, depression, anxiety, and distress. While most studies focus on PTSD and depression [19], other reactions are less documented [3]. This research highlights that 43.3% of students were psychologically affected by the earthquakes, experiencing increased depression, anxiety, negative self-concept, somatization, and hostility. This result may be related to the fact that adolescents were seriously affected by these two major earthquakes with a magnitude of over 7 and they did not know how to cope with this situation. Adolescents may have shown internal and external destructive reactions such as hostility and somatization in the face of this situation, which they had difficulty coping with. Also, observations made by researchers after the earthquake revealed that the self-concept of adolescents was seriously damaged by the earthquake. It was analyzed whether the psychological reactions of the adolescents after the earthquake differed in terms of their demographic characteristics. Regarding gender, it was concluded that the female students showed more anxiety, depression, negative self-concept, somatization, hostility and were more affected by the earthquake than the males. Accordingly, the female students displayed more severe psychological reactions after the earthquake than the male students. It was reported that 3 months after an earthquake whose magnitude was 8, female adolescents showed more PTSD symptoms than males [15]. It was determined that female students were more affected by the earthquake than males and showed higher rates of PTSD, chronic anxiety and depression reactions [7, 14, 51, 52]. Another study conducted after the earthquake concluded that female adolescents experienced more symptoms of PTSD and depression than males [53]. These findings can be explained by the fact that women are more sensitive to stressful events than men [54]. This means that women exposed to natural disasters such as earthquakes may be a risk group for showing psychological symptoms. When the psychological reactions of the adolescents were compared according to their earthquake injury status, no significant difference was detected. However, studies in literature report that individuals injured in the earthquake show more symptoms of PTSD [51, 55] and that there are variables that significantly explain PTSD [56]. In addition, it was found that adolescents whose family members were injured experienced more anxiety [14]. This result may be related to the number of the people in the sample group (10 people) and the severity of the injury level. Researchers state that the magnitude of the event, proximity to the epicenter and exposure to the disaster affect the mental health of adolescents [21, 57]. However, the small number of injured students in the study group may make it difficult to accurately understand the psychological reactions of injured and uninjured adolescents. The findings of this research point out that the adolescents who lost their relatives in the earthquake experience more PTSD, anxiety, depression, hostility and negative self-perception. These findings appear consistent with previous research findings. Children and adolescents whose relatives died due to the earthquake show symptoms of PTSD [15]. It is stated that losing a family or friend is a risk factor for the continuation of PTSD symptoms [58]. It is expressed that those whose family members have died are five times more likely to develop symptoms of anxiety and depression than those whose family members have not died [59].

In addition, injuries to family members rather than death of family members are associated with chronic anxiety symptoms [14]. The current research and previous findings conclude that loss of loved ones due to earthquakes significantly affects the mental health of adolescents. It appears that this condition may be a risk factor for psychological symptoms. In terms of possible differences in psychological effects due to moving to another city after the earthquake, it was determined that the adolescents who moved were more affected by the earthquake, that is, they showed more PTSD. Other psychological symptoms are not affected by moving. This finding coincides with the research findings by Sharma and Kar [7]. Researchers found that adolescents who moved after the earthquake showed more intense PTSD symptoms than those who did not. Kılıç et al. [60] found that moving after trauma is linked to greater distress and slower recovery. Bland et al. [61] reported better psychological outcomes for those who did not relocate or quickly returned post-earthquake. Kılıç et al. [59] also noted higher depression symptoms in individuals who moved, with no PTSD difference. Overall, moving after an earthquake may lead to more PTSD and depression symptoms due to the loss of social support (friends, neighbors, relatives). A meta-analysis highlights low social support as a major risk factor for PTSD in children and adolescents [62].

Suggestions

The study found that 43.3% of students reported being affected by the earthquake. Natural disasters like earthquakes are significant stressors [6, 10, 47]. Future research should include activity-based stress coping programs for these students. The study also identified strong positive relationships between earthquake impact and anxiety, depression, somatization, hostility, and negative self-perception in adolescents, particularly in those who lost relatives or relocated. These symptoms indicate PTSD and align with existing literature [19, 49]. Collaboration between school counselors and psychiatrists can help students cope with crises. Additionally, female students were more affected than males, consistent with other studies [7, 14, 15, 50, 52]. Future research should focus on female students to explore why they are more affected by such crises.

The study highlights that schools remain a protective factor even after an earthquake. Social support from schools helps students overcome trauma [108]. Therefore, policymakers should avoid closing schools during natural disasters and consider alternatives to continue education. Maintaining education through online tools can address issues like absenteeism [83]. Resuming education quickly in affected areas helps prevent academic losses and provides a safe learning environment [76], thus maintaining schools as a protective factor. Social interaction at schools is crucial for students' strength and coping [109], so reopening schools promptly supports this protective factor.

The study found that students struggled to cope even after returning to school. Policymakers should ensure school staff are continuously trained to respond to disasters and crises, crucial for healthy future generations. School counselors planned programs to address learning losses, refocus students on lessons, and help them readapt. Implementing academic resilience programs can aid students' re-adaptation despite challenges. If trauma-affected students are not properly supported, their reactions may be misinterpreted as problematic behavior, leading to school withdrawal [110]. School counselors alone cannot protect students' mental health; holistic school-based intervention programs are needed. These programs help overcome post-traumatic difficulties and improve school engagement, success, attendance, and reduce post-traumatic symptoms and behavioral problems [110].

Limitations

The fact that some of the interviews conducted within the scope of Study 1 were conducted by telephone or online can be seen as a limitation. Although care is taken, non-verbal expressions of the participants can be ignored in this type of data collection. There was difficulty in reaching the injured students in the research group in Study 2 and therefore the number of injured students remained limited. During the data collection process, the fact that schools were closed for a certain period of time due to the earthquake and that most students did not come to school even though the schools opened later made it difficult to collect more data from injured students. Additionally, some of the injured students had to go to a different location in their province or to other provinces because their homes were destroyed, making it even more difficult to reach these students. During this period, the students were faced with many events that reminded them of the earthquake (such as intense aftershocks, destruction of risky buildings, houses destroyed or damaged in the earthquake). Therefore, if this cross-sectional study is repeated, the results may differ because the earthquake conditions change.

Author contributions

MŞ and RA designed the study. MŞ wrote the introduction, and discussions of Study 1 and Study 2. GS ran the analyses, wrote method and results of Study 1. HYY ran the analyses, wrote method and results of Study 2. RA wrote the summary, suggestions and limitatios. All authors contributed to the article and approved the submitted version.

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Data availability
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the Ethics Committee of Hasan Kalyoncu University (E-97105791-050.01.01-36095). The parents, adolescents (Under 16 years old) and other participants were informed beforehand of the study and their informed consent and assent were collected. The whole study was conducted with volunteer participants. This study was performed in line with the principles of the Declaration of Helsinki.

Consent for publication
Not Applicable.

Competing interests
The authors declare no competing interests.

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