Religious Fatalism and Earthquake Preparedness among Turkish Muslims: Risk Perception as a Moderating Factor

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Abstract

This study investigates the relationship between earthquake risk perception and disaster preparedness behaviours following the devastating twin earthquakes (7.6 and 7.4) in Turkey on February 6, 2023. While it is well documented that earthquake risk perception is higher among educated individuals in Turkey, the impact of this perception on disaster preparedness still needs to be investigated. In particular, the study shows that fatalistic tendencies significantly moderate the relationship between earthquake risk perception and disaster preparedness, such that increased fatalism reduces the impact of earthquake risk perception on preparedness. These results underscore the need to develop effective earthquake preparedness strategies cognizant of religious and cultural contexts. This study provides critical insights for policymakers and emergency management professionals aiming to enhance disaster preparedness in regions prone to seismic activity.

Keywords: Earthquake risk perception, Disaster preparedness, Fatalism tendency

Introduction

Earthquakes are responsible for about 60,000 deaths from natural disasters worldwide (OECD, 2008). For example, 17,000 people died in the 7.8 magnitude Marmara earthquake in Turkey in 1999, more than 25,000 people died in the 6.3 magnitude earthquake in Bem, Iran, in 2003, and more than 80,000 people died in the 8.0 magnitude earthquake in Sichuan, China in 2008 (Anbarci et al., 2005). Turkey, a country with a high earthquake risk, is geographically located on the Alpine-Himalayan, i.e., Mediterranean earthquake belt, and therefore experiences earthquakes of different magnitudes and frequencies. In a study on the probability of earthquake recurrence in Turkey, it was concluded that a magnitude 5.7 earthquake could occur every 2.5 years on average, a magnitude 7.2 earthquake every 15 years on average, and a magnitude 7.7 earthquake every 27 years on average (Özel & Solmaz, 2012). In Turkey, more than 50,000 people lost their lives, more than 18,000 buildings collapsed, and more than 750,000 buildings were damaged in a 7.6 magnitude earthquake centered in Elbistan district of the same province 9 hours after the 7.7 magnitude earthquake centered in Kahramanmaraş on February 6, 2023 (Disaster and Emergency Management Presidency, 2023).

Although earthquakes' physical or material consequences are emphasised, the damage caused by earthquakes teaches us why we should be prepared for possible future earthquakes (Aksa et al., 2020; Yari et al., 2019). One of the strongest determinants of preparedness for disasters such as earthquakes is how risk is perceived (Lynch et al., 2024; Richard Eiser et al., 2012). However, research results show that

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many variables, such as social, cultural, and psychological factors, play a role in the relationship between earthquake risk perception and attitudes toward disaster preparedness. (Boholm, 1998; Han et al., 2017; Lin et al., 2008; Lindell & Perry, 2000). Earthquakes are critical natural disasters that can cause severe loss of life and structural damage worldwide. Especially in regions with high earthquake risk, such as Turkey, it is vital to be prepared for these disasters. However, social, cultural, and psychological factors must be considered to understand the relationship between earthquake risk perception and disaster preparedness. Understanding these factors is critical for effective disaster management and social preparedness.

Earthquake Risk Perception

Risk perception is assumed to be higher after a disaster experience, leading to more personal protective actions (Wachinger et al., 2013). According to Miceli et al. (2008), risk perception is the subjective assessment of the possible damage due to future disasters and emergencies. Earthquake risk perception evaluates a hazard based on expected future damage, vulnerability, and exposure to human life (Gavarini, 2001). Earthquake risk perception is known to be influenced by ethnicity, social class (Baytiyeh & Öcal, 2016), knowledge and experiences related to earthquakes (Becker et al., 2017), gender, age, income, education, and socio-economic status (Chaney et al., 2013; Kellens et al., 2011). Since beliefs and emotions are central to people's responses to risks (Joffe, Rossetto, & Adams, 2013), earthquake risk perception is likely to affect earthquake preparedness behaviours directly.

Before disasters such as earthquakes, people tend to do little or nothing to prepare. (Lindell & Perry, 2000). It is reported that individuals and societies with higher levels of education are less vulnerable to natural disasters because they are better prepared for them and can recover much better. (Muttarak & Lutz, 2014). It is known that as risk perception increases, disaster preparedness also increases. (Miceli et al., 2008; Solberg et al., 2010; Wachinger et al., 2013). Some studies have similar findings in Turkey (Ayvazoğlu et al., 2020; Özdemir, 2018). However, it is noteworthy that there are also studies reporting the opposite of these findings (Gün Çınğı & Yazgan, 2022; Hall & Slothower, 2009; Jóhannesdóttir & Gísladóttir, 2010; Karancı et al., 2005; Lovekamp & Tate, 2008; Rüstemlı & & Karancı, 1999; Siegrist & Gutscher, 2006; Takao et al., 2004; Wachinger et al., 2013). On the other hand, some studies show that people are aware of earthquake risks but may take refuge in fatalistic attitudes instead of taking measures to reduce future earthquake risks (Ainuddin et al., 2014; Baytiyeh & Naja, 2016).

Fatalism Tendency and Disaster Preparedness

Although fatalism varies according to different historical periods and cultures (Esparza et al., 2015; Maercker et al., 2019; Solomon, 2003), it can be defined as the tendency to believe that one's destiny is directed and fulfilled by an external, invisible force rather than one's own will (Rotter, 1966; Maercker et al., 2019). In other words, fatalism is a control mechanism outside of us. Believing in internal or external control can change disaster risk perception (Baytiyeh & Öcal, 2016). Since fatalism belief is based on external control-oriented thinking (Lindell & Perry, 2000), this thinking may lead to indifference toward disaster risk (Baytiyeh & Öcal, 2016; Xue et al., 2014). Despite having experienced a severe earthquake, people are less likely to prepare for new earthquakes (Joffe et al., 2019). Few studies examine how fatalistic beliefs about disasters interact with individual factors (Liu & Sun, 2022; Sun et al., 2022). Since it is known that fatalistic beliefs negatively affect disaster preparedness and earthquake risk perception

(Aksa et al., 2020; Baytiyeh & Öcal, 2016; Liu & Sun, 2022), it is considered essential to reveal the relationship between fatalistic beliefs and other variables.

It is noteworthy that studies examining the relationship between fatalism belief and disaster preparedness are common in Turkey (Bilik, 2019; Çoban et al., 2017; Demirbilek & Uzman, 2023; Demirci, 2021; Efeoğlu et al., 2021; Gökçay & Çevirme, 2023; Kılıç & Malak, 2022). However, it is noteworthy that although university students with high education levels and disaster experience have high disaster awareness (Dikmenli & Yakar, 2019; Ertuğrul & Ünal, 2020; Şahin et al., 2018), their level of disaster preparedness is low (Çoban et al., 2017; Şahin et al., 2018). This is because people with higher levels of education are expected to be more prepared for natural disasters (Muttarak & Lutz, 2014). However, it is seen that the lack of preparedness of educated people in Turkey is related to their fatalistic beliefs. (Akalın et al., 2020; Çoban et al., 2017; Demirbilek & Uzman, 2023). In addition, although the earthquake risk perceptions of people with higher education levels are higher than those with lower education levels (Ayvazoğlu et al., 2020; Tercan, 2022), the level of preparedness is low (Gün Çınğı & Yazgan, 2022). Wachinger et al. (2013) define the negative relationship between risk perception and disaster preparedness as a "risk paradox." In other words, it points out that individuals with highrisk perceptions and disaster experiences rarely take precautions and act accordingly. We think that the belief in fatalism may explain this paradox. It can be said that there is a need to investigate the reasons for different results in studies examining the relationship between earthquake risk perception and disaster preparedness. Therefore, it is essential to reveal whether fatalism beliefs mitigate the effect of earthquake risk perception on the disaster preparedness behaviours of university students studying in Turkey.

Islam's Perspective on Fatalism

Turkey, a country where the majority of the population adheres to Islam, is located in active seismic zones and has frequently experienced devastating earthquakes throughout its history, making it highly susceptible to future seismic events (AFAD, 2023; USGS, 2023; Pew Research Centre, 2017). As the level of education increases, knowledge about earthquake risk increases, and people know better how to cope with earthquakes and their consequences (Tekeli-Yeşil et al., 2011). However, fatalistic beliefs may prevent preventive behaviours such as preparing for disasters because fatalistic beliefs explain the uncontrollability of earthquake damage with the earthquake's power (McClure et al., 2001). In other words, fatalistic beliefs indicate that it is impossible to prevent the damage caused by earthquakes as their intensity increases. Moreover, individuals who have experienced more earthquakes have higher fatalistic tendencies (Sun et al., 2022). Therefore, individuals who experienced severe earthquakes in Turkey on February 6, 2023, may have increased their fatalistic beliefs even if they have higher levels of education. Although Islamic teachings emphasise that when it comes to disasters, people should first make preparations and then believe in fate (Aksa, 2020), since a significant portion of buildings in Turkey are not built according to earthquake regulations (Aral & Tunc, 2021), people are likely to rely more on fatalism. Moreover, Turkey will likely be shaken by severe earthquakes in the future (Özel & Solmaz, 2012). In conclusion, the interplay between high earthquake risk, education levels, and fatalistic beliefs presents a complex challenge for disaster preparedness in Turkey.

Destructive earthquakes frequently affect Turkey due to its location on active fault lines. In addition, the majority of its population identifies with Islam, which shapes many cultural and psychological attitudes

toward life, including beliefs about fate and destiny. In this context, religious fatalism—rooted in interpretations of Islamic teachings—may influence how individuals perceive and respond to disaster risks. While high earthquake risk perception would typically be expected to lead to greater preparedness, cultural and religious factors such as fatalistic beliefs may counteract this tendency. Therefore, in the present study, it is considered that fatalism, linked to Islamic beliefs, may play a role in the low level of disaster preparedness among individuals with high earthquake risk perception.

The belief in fatalism stops or prevents people from taking action in different religions and cultures (Xue et al., 2014). Findings from studies conducted in China, Indonesia, and Iran confirm this idea (Aksa et al., 2020; Liu & Sun, 2022; Yari et al., 2019). However, these situations do not comply with Islam's understanding of fatalism. Unlike societies in countries such as Norway, Canada, and the US, in Turkey, about half of the people believe that there is little they can do to change their lives, and the perception of life determined by fatalism (more as a cultural idea) is widely shared in Turkey. (Çarkoğlu & Kalaycıoğlu, 2009). It is known that people living in Middle Eastern countries where the majority of the people believe in Islam have a high tendency towards fatalism (Acevedo, 2008; Baytiyeh & K. Naja, 2014; Baytiyeh & Naja, 2016). A study conducted on high school students from Turkey and Lebanon reveals that there is not enough information about the earthquake risk perceptions of people living in the Middle East region; both groups have high fatalistic beliefs, and fatalistic beliefs negatively affect disaster preparedness (Baytiyeh & Öcal, 2016). These studies show that individuals in Muslim countries do not know the view of Islam on fatalism, or they do not apply it even though they know it. According to Islam, fatalism is not to do anything but to trust after taking all precautions.

In a country like Turkey, which is frequently shaken by earthquakes, a higher level of education may contribute to an increased awareness of earthquake risk, and people may be better prepared to cope with earthquakes. However, misunderstanding or misapplication of Islam's beliefs about fate may hinder these preparedness behaviours. This is because, according to Islam, it is accepted that Allah controls everything, and every event happens with Allah's permission. According to this understanding, disasters are also part of Allah's will and destiny. Disasters are considered a test for people. According to Islam, people should show patience and trust in Allah in the face of difficulties. Disasters are seen as part of this process of patience and testing. Islam emphasises the importance of being prepared for disasters. While accepting the fate determined by Allah, people should also be prepared for disasters by taking earthly precautions. This means that Islam encourages adopting a careful and conscious attitude towards disasters. In support of these statements, verse 39 of Surah Najm in the Qur'an clearly emphasises the condition of believing in fate:

They state that no soul burdened with sin will bear the burden of another, that each person will only have what they endeavoured towards, and that the outcome of their endeavours will be seen in their record. They will be fully rewarded; to your Lord alone is the ultimate return of all things (The Holy Quran, 53/38-42).

This verse means that man has only the results of his efforts and endeavours. In other words, when a man acts with his best effort and endeavour, the results reflect that effort and endeavour. Man realises his actions align with his efforts and bears the consequences of those actions. This verse emphasises man's responsibility and dependence on the consequences of his actions. After understanding and

applying this verse correctly, one should put one's trust in Allah. Later, in verse 107 of Surah Yunus, Allah addresses people as follows:

Moreover, 'If Allah touches you with harm, none can undo it except Him. Furthermore, no one can withhold His bounty if He intends good for you. He grants it to whoever He wills of His servants. Moreover, He is the All-Forgiving, Most Merciful (The Holy Quran, 10/107).

Not understanding the meaning of this verse and not showing sufficient effort in its application, i.e., not making preparations for any disaster but simply saying that if it is fated, I cannot prevent it, is contrary to religious values. Therefore, they make the same mistake when encountering earthquakes or other natural disasters. Especially individuals with more earthquake experience may have more fatalistic tendencies. This situation shows that measures such as structural suitability and disaster management have become even more critical in a country with a high earthquake risk like Turkey.

Considering this situation, it is thought that individuals' tendency to think of fatalism by abstracting it from religious values leads to a decrease in their level of preparedness for disasters. To minimise possible future losses, it is necessary to adapt people's perspective on fatalism in the Islamic religion and to raise awareness. This study examines fatalism's moderating role in the relationship between earthquake risk perception and disaster preparedness. In this study, answers to the following questions were sought:

H1: Earthquake risk perception significantly predicts psychological preparedness for disasters.

H2: Fatalism tendency moderates the relationship between earthquake risk perception and psychological preparedness for disasters.

These hypotheses are designed to test the effect of the independent variable, earthquake risk perception, on the dependent variable, psychological preparedness for disasters, and how the variable of fatalism tendency moderates this relationship.

Method

In the study, the relational survey model was used. A relational survey aims to collect data to determine the specific characteristics of a group (Büyüköztürk, 2018). The significance level is 0.05 (95%). It was determined that earthquake risk perception is an external variable, while psychological preparedness for disasters is an internal variable. The moderate variable whose effect on the correlation between dependent and independent variables is measured is fatalism tendency.

Procedure

An online questionnaire was prepared for data collection. On the first page of the online survey, participants were informed about the duration and purpose of the study. Google Forms sent the research link to the participants through social media platforms and messaging programs such as WhatsApp, Twitter, and Instagram. The inclusion criteria were being a university student aged 18 years and above. People who did not have any university education were not included in the study. Individuals who met these criteria and volunteered to participate were included in the study. Since the study's data was collected after the earthquake disaster, and this is a sensitive, traumatic experience, the

participants were informed that they could stop answering the questionnaire if they felt uncomfortable. In addition, participants were advised not to provide information about their personal information to protect confidentiality and anonymity. The response time was 7 minutes at the beginning of the questionnaire. The study data were collected while the education process was in progress. The data collection process continued for about three months to avoid coinciding with the exam periods of the students. The data were analysed using the SPSS 25 package program.

Ethical Considerations

Research data were collected online. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The Social Sciences and Humanities Research Ethics Committee approved the study at Inonu University. (Date: 07.03.2024, No: 7).

Participants

Convenience sampling was used in this research. Participants were people who had experienced an earthquake. Data were collected from 246 university students (Mage = 20.49; SD 2.57). 76.4% of the participants are female, and 23.6% are male. 45.5% are first-year students, 30.5% are third-year students, 16.3% are fourth-year students, and 7.7% are second-year university students.

Measures

Fatalism Tendency Scale

The Fatalism Tendency Scale, developed by Kaya and Bozkur (2015), is a 5-point Likert-type scale of 24 items. The maximum score on the test is 120, and the minimum score is 24. The scale has four subdimensions: The predestination dimension consists of 8 items with a Cronbach's alpha coefficient of 0.86. The superstition dimension consists of 6 items with a Cronbach's alpha coefficient of 0.81. The luck dimension consists of 4 items with a Cronbach's alpha coefficient of 0.71. The personal control dimension consists of 6 items with a Cronbach's alpha coefficient of 0.78. The items' factor loadings in the scale's four sub-dimensions range from 0.57 to 0.76. The present study calculated the Cronbach's alpha coefficient as 0.77.

Psychological Preparedness for Disaster Threat Scale

The Scale, developed by Zulch (2019) and adapted into Turkish by Görgün et al. (2023), is a four-point Likert-type scale. It consists of 21 items with a Cronbach's alpha coefficient of 0.95. The maximum score on the scale is 84, and the minimum score is 21. The scale has three sub-dimensions: Management of external situational information, consisting of 9 items, with a Cronbach's alpha coefficient of 0.91. Management of one's emotional and psychological responses, consisting of 9 items, with a Cronbach's alpha coefficient of 0.93. Management of personal social environment, consisting of 3 items, with a Cronbach's alpha coefficient of 0.83. The confirmatory factor analysis of the three-factor model resulted in a CFI value of 0.908 and an RMSEA value of 0.074. The present study calculated the Cronbach's alpha coefficient as 0.87.

Earthquake Risk Perception Scale

The Earthquake Risk Perception Scale, developed by Trumbo et al. (2016), was adapted into Turkish by Mızrak et al. (2021). This 5-point Likert-type scale consists of 8 items, with an overall Cronbach's alpha coefficient of 0.86. The scale comprises two dimensions: emotional risk perception and cognitive risk perception, with factor loadings ranging from 0.65 to 0.87. The Cronbach's alpha coefficient for the emotional risk perception subscale is 0.80, and for the cognitive risk perception subscale, it is 0.85. The present study calculated the Cronbach's alpha coefficient as 0.86.

Statistical Analysis

In this study, the model was tested to reveal the moderating role of fatalism in the relationship between earthquake risk perception and disaster preparedness. Data were analysed using the SPSS PROCESS (Model 1) version. Before mediation analysis, data were checked for linearity, normality, and multicollinearity problems. The results are presented in Table 1.

Table 1

Descriptive Statistics of Variables

1 5								
Variables	Min.	Max.	Mean	SD	Skew.	Kurt.	VIF	CI
Psychological preparation for disaster	35.00	83.00	62.73	8.41	064	074		1000
Fatalism Tendency	34.00	86.00	59.89	9.86	158	.118	1.027	16.24
Earthquake risk perception	17.00	40.00	30.87	5.64	108	817	1.027	10.93
INT	-3.49	3.81	0.16	1.02	.376	2.58	1.012	16.39

N=246.

It was examined whether the variables had a normal distribution by looking at the skewness and kurtosis values, and it was seen that the data showed a normal distribution. It was observed that the skewness and kurtosis values of the variables were between -1 and +1. Since the Variance Inflation Factor (VIF) values were below 10, no multicollinearity problem was observed.

Findings

Relationships between variables were examined using the Pearson correlation coefficient, and the results are presented in Table 2. The relationships between earthquake risk perception, disaster preparedness, and fatalism tendencies were examined. As shown in Table 2, fatalism tendency is negatively related to disaster preparedness (r= -.170) and positively related to earthquake risk perception (r= .162).

Table 2

Relationships between Variables

Variables	а	Ь	С
a- Fatalism tendency	1		
b- Disaster preparedness	170**	1	
c- Earthquake risk perception	.162**	265*	1

* *p* < 0.01, ** *p* < 0.05

The Moderation Role of Fatalism Tendency

The values in Table 3 show that disaster preparedness significantly predicts earthquake risk perception (B = -0.178, 95% CI: -0.26, -0.10; *p*<.001).

Table 3

Regression Analysis

	Estimate	В	β	SE	р	F	R	R^2
1	Constant	80.63		3.94	<.01			
	Earthquake risk perception	-0.11	24	.09	<.01	11.15	.295	
	Fatalism tendency	-0.36	13	.05	<.05			.087
2	Constant	81.15		3.91	<.01			
	Earthquake risk perception	-0.36	24	.09	<.01			
	Fatalism tendency	-0.12	15	.05	<.05	9.69	.327	.107
	INT	1.17	.14	.50	<.05			

Dependent variable: preparedness for disasters

The regression analysis results in Table 3 show that earthquake risk perception and fatalism tendencies explain 8.7% of disaster preparedness levels. However, when INT (Earthquake risk perception * Fatalism tendency) is included in the model, this effect increases to 10.7%. Therefore, it can be seen that the contribution of fatalism tendency to the model is 2% (10.7-8.7%).

Table 4 shows how the moderating effect of fatalism tendencies differs according to mean - +1 standard deviation scores.

Table 4

Conarional Effects of the Focal Frederior on Productator Values								
Fatalism tendency	Coeff.	SE	t	p	LLCI	ULCI		
50.02	56	.12	-4.49	.001	81	32		
59.89	36	.09	-3.92	.001	54	18		

Conditional Effects of the Focal Predictor on Moderator Values

69.75	15	.13	-1.18	.219	40	.10	

When the mean score of the fatalism tendency is more than one standard deviation above the mean, its effect on the model is not statistically significant (p>0.05). However, it is observed that the contribution of the mean score and the score one standard deviation below the mean of the fatalism tendency to the model is significant (p<0.05). Thus, it has been demonstrated that the tendency toward fatalism moderates the relationship between earthquake risk perception and psychological preparedness for disasters (see Figure 1).

Figure 1

The moderating role of fatalism tendency



Discussion

This study examines the moderating effect of fatalism on the relationship between university students' earthquake risk perception and psychological preparedness for disaster threats. The study shows that earthquake risk perception predicts psychological preparedness for disasters. This supports our hypothesis H1. In addition, in our research, fatalism has significantly affected the relationship between earthquake risk perception and psychological preparedness. This finding confirms our H2 hypothesis and provides essential information about how fatalism tendency changes the relationship between individuals' earthquake risk perception and psychological preparedness.

The study's first hypothesis determined that earthquake risk perception significantly affects psychological preparedness for disaster threats. The pessimistic prediction of earthquake risk perception on disaster preparedness is similar to previous studies (Gün Çınğı & Yazgan, 2022; Hall & Slothower, 2009; Jóhannesdóttir & Gísladóttir, 2010; Karancı et al., 2005). However, studies suggesting the opposite hypothesise that earthquake risk perception will reach higher after the disaster experience, leading to more personal protective actions (Miceli et al., 2008; Solberg et al., 2010; Wachinger et al., 2013). The findings of studies conducted with individuals who have experienced earthquakes in Turkey reveal that their level of disaster preparedness is low (Bilik, 2019; Gün Çınğı & Yazgan, 2022; Karancı et al., 2005; Rüstemlı & Karancı, 1999). However, studies suggesting the opposite hypothesise that risk perception will increase after the disaster experience and lead to more personal protective actions (Miceli et al.,

2008; Solberg et al., 2010; Wachinger et al., 2013). The risk paradox explains the negative relationship between earthquake risk perception and disaster preparedness (Wachinger et al., 2013). Individuals with high earthquake risk perception and disaster experience do not prepare for disasters psychologically. However, it is thought that the current research finding is also related to what happened after the twin earthquakes in Turkey on February 6, 2023. Namely, the idea that people were helpless in the face of earthquakes that affected such a large area and that they could not prevent the dangers, no matter what they did, may have led them not to prepare for disasters. As a result of this research, it is revealed how high the fatalistic tendencies of individuals living in a country where the majority of the population is Muslim are. As a result, they cannot fulfil their religious obligations sufficiently.

In the other hypothesis of the study (H2), it is seen that the tendency toward fatalism moderates the relationship between earthquake risk perception and psychological preparedness. The fact that earthquake risk perception positively predicts fatalism tendency is consistent with the findings obtained from societies with high fatalism tendency (Aksa et al., 2020; Baytiyeh & Naja, 2014; Şimşekoğlu et al., 2013). Fatalism, which is a religious phenomenon, affects the lives of individuals with some cultural changes during the implementation phase (Maercker et al., 2019) and is widely discussed in Middle Eastern countries (Acevedo, 2008; Baytiyeh & K. Naja, 2014; Baytiyeh & Naja, 2016). The findings of the studies conducted with individuals who have experienced earthquakes in Turkey suggest that the level of disaster preparedness is low, and one of the answers to why people do not make preparations (Şahin, 2016) is the tendency toward fatalism. Research findings supporting the negative relationship between fatalistic tendency and disaster preparedness (Demirbilek & Uzman, 2023; Joffe et al., 2013; Yari et al., 2019) show that the fatalistic beliefs of young Muslim university students do not fully comply with the guidance in Islam. Although it is known that individuals with higher education levels are more prepared for disasters (Muttarak & Lutz, 2014), a qualitative study conducted with university students in Turkey shows that fatalistic understanding lies behind the lack of earthquake preparedness and taking precautions (Çoban, 2017). Therefore, it is thought that fatalism, linked to Islamic beliefs, plays a role in the low level of disaster preparedness of those with high earthquake risk perception in the current study.

It has been revealed that the belief in fatalism perceived in different religions and cultures prevents people from taking action. This belief can lead to indifference towards disaster risk (Xue et al., 2014). However, in Islam, fatalism is not to "just wait" without doing anything; on the contrary, after taking all precautions, it is commanded to trust and rely on Allah and be tawakkul. In support of this idea, the Qur'an clearly states in verse 159 of Surah Al-Imran. Allah (swt) states;

... Once you make a decision, put your trust in Allah. Indeed, Allah loves those who trust Him (The Holy Quran, 3/159).

As seen in the above verse, a Muslim is not expected to make any preparations in the face of uncontrollable situations such as disasters. The existence of a negative correlation between university students' earthquake risk perception levels and their psychological preparedness for disasters is explained by a tendency towards fatalism. It is seen that a fatalism tendency leads university students to do nothing in terms of preparation for disasters. The fact that almost half of the people in Turkey believe that there is very little they can do to change their lives (Çarkoğlu & Kalaycıoğlu, 2009) is thought to be

another result of fatalistic thinking. According to this finding, increasing university students' fatalism tendency levels (thoughts not based on the fatalism understanding of Islam) makes the relationship between earthquake risk perception and psychological preparedness for disasters meaningless. As a result, it is thought that the negative relationship between earthquake risk perception and psychological preparedness for catastrophe (which is unexpected because individuals are expected to prepare for earthquake risk) of university students living in a Muslim country and receiving higher education is due to the problems in the understanding of fatalism.

Conclusion

This study aimed to examine the moderating effect of fatalism on the relationship between university students' earthquake risk perception and psychological preparedness for disaster threats. The study revealed that earthquake risk perception significantly predicted psychological preparedness for disasters. This result supports our hypothesis H1 and shows that individuals' perception of earthquake risk significantly affects their level of psychological preparedness.

In addition, our study's fatalism tendency significantly affected the relationship between earthquake risk perception and psychological preparedness. This finding confirms our hypothesis H2 and provides essential information about how fatalism tendency changes the relationship between individuals' earthquake risk perception and psychological preparedness. Considering that fatalism should not be understood as a passive waiting but as taking active precautions and then trusting, these findings are not in line with Islam's understanding of tawakkul.

Our study suggests that education and awareness-raising programs aimed at increasing earthquake risk perception can contribute to better psychological preparedness of individuals against disasters. Moreover, considering the impact of fatalistic tendencies, including the topics of trust and active prevention in the content of these programs, may play an essential role in strengthening individuals' psychological preparedness. Future research could expand similar studies on different demographic groups to more comprehensively examine the effects of earthquake risk perception and fatalistic tendencies on disaster preparedness. In conclusion, this study has significantly contributed to disaster risk management and psychological preparedness and provides valuable recommendations for policymakers and educators.

Limitations

Although the findings of this study provide important insights, some limitations should be considered. First, the study sample consists of university students only. This may limit the generalizability of the findings to the general population. In future research, the generalizability of the conclusions can be increased by using more diverse samples, including different age groups, education levels, and socioeconomic status.

One of the limitations of this study is that the sample consisted only of participants who were members of the Islamic faith. This situation limits the generalizability of the findings to individuals with different religious beliefs. In future studies, conducting larger-scale and cross-cultural comparative studies that include individuals with other belief systems, such as Christianity and Judaism, may contribute to a more comprehensive understanding of the impact of religious fatalism on disaster preparedness. The data collection method used in the study was self-report questionnaires. Self-report questionnaires may contain bias due to the tendency of participants to give dishonest or socially desirable responses. Therefore, future research could reduce such biases using more objective data collection methods. The study used a cross-sectional design. This makes it difficult to identify causal relationships between variables. It may be helpful to conduct longitudinal studies to understand how the relationships between earthquake risk perception, fatalism tendency, and psychological preparedness change over time. Another area for improvement is whether the scales used to measure the tendency toward fatalism in the study adequately reflect cultural differences. Understanding of fatalism may vary in different cultural contexts, which may affect the results. Future research could address this limitation using scales designed to better reflect cultural differences. Finally, the study focused only on psychological preparedness. However, disaster preparedness is a multidimensional concept that includes other dimensions, such as physical, social, and economic preparedness. Future research could expand its scope to include these dimensions as well.

Despite these limitations, our study contributes significantly to understanding the relationships between earthquake risk perception, fatalism, and psychological preparedness. These findings provide important clues when developing and implementing disaster preparedness programs.

Suggestions

Based on the results obtained from this study, some suggestions were made to researchers and people working in other fields. Longitudinal studies examining the relationship between fatalism, risk perception, and disaster preparedness can be conducted to obtain more valid and reliable results. In addition, using qualitative research methods to get in-depth information may increase the effectiveness of the results. The mediation of other variables between risk perception and disaster preparedness can be tested. Furthermore, the role of moderating variables that impact the relationship between earthquake risk perception and disaster preparedness can be examined. To find a way to mobilise individuals to prepare for disasters, disaster education and the way of perceiving fate and Islam or religious teachings can be examined. Moreover, data on risk perception, disaster preparedness, and fatalistic beliefs should be collected and analysed with quantitative and qualitative research methods to increase the data's validity and credibility.

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