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***Research Article / Araştırma Makalesi***

# DISASTER RISK PERCEPTION REGARDING CULTURE AND PERSONALITY*

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**Abstract**
Disasters appear in different ways as a result of dangerous and risky situations. The impact of events that may lead to disasters differs according to societies' risk reduction and preparedness levels. In order for societies to attach importance to risk management activities, it is important that they first perceive the hazards and risks that may lead to disasters in their regions. In this framework firstly, the disaster risk perception scale was developed and then it was tried to reveal whether it is related to culture and personality. The survey was limited to 900 people aged 18 and over living in Muğla and Van provinces in Türkiye. The data were analyzed in LISREL software. It was found that the agreeableness dimension of the personality scale was positively related to all dimensions of disaster risk perception. The conscientiousness dimension of the personality scale was found to be negatively related to the threat dimension of disaster risk perception, and the openness to experience was found to be negatively related to the fatalism dimension of disaster risk perception. No relationship was found between the extraversion dimension of personality and the perception of disaster risk. The uncertainty avoidance dimension of the culture scale was found to be positively correlated with the anxiety and controllability dimensions of disaster risk perception. No relationship was found between the collectivism dimension of culture and the perception of disaster risk.
**Keywords:** Disaster, disaster risk perception, culture, personality.
**JEL Codes**: H83, S54, Z10

# KÜLTÜR VE KİŞİLİK AÇISINDAN AFET RİSKİ ALGISI

**Öz**
Afetler tehlikeli ve riskli durumların bir sonucu olarak farklı şekillerde karşımıza çıkmaktadır. Afete yol açabilecek olayların etkisi ise toplumların risk azaltma ve hazırlık seviyelerine göre farklılık göstermektedir. Toplumların risk yönetimi faaliyetlerine önem vermeleri için ilk olarak bölgelerinde afete yol açabilecek tehlike ve riski algılamaları önemlidir. Bu çerçevede ilk olarak afet risk algısı ölçeği geliştirilmiş, daha sonra kültür ve kişilikle ilişkili olup olmadığı ortaya konmaya çalışılmıştır. Anket çalışması, Türkiye'de Muğla ve Van illerinde yaşayan 18 yaş ve üstü 900 kişiyle sınırlandırılmıştır. Veriler LISREL programında analize tabi tutulmuştur. Kişilik ölçeği uyumluluk boyutunun, afet risk algısı boyutlarının tümüyle pozitif yönde ilişkili olduğu tespit edilmiştir. Kişilik ölçeğinin sorumluluk boyutu, afet risk algısının tehdit boyutuyla; yeniliğe açıklık boyutu da, afet risk algısının kadercilik boyutuyla negatif ilişkili olduğu tespit edilmiştir. Kişiliğin dışadönüklük boyutuyla afet risk algısı arasında ilişki tespit edilmemiştir. Kültür ölçeğinin ise belirsizlikten kaçınma boyutunun, afet risk algısının endişe ve kontrol edebilirlik boyutlarıyla pozitif ilişkili olduğu tespit edilmiştir. Kültürün kolektivizm boyutuyla afet risk algısı arasında ilişki tespit edilmemiştir.
**Anahtar Kelimeler:** Afet, afet risk algısı, kültür, kişilik.

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## Introduction

Disaster is the result of natural, technological or human-induced events in which individuals in a society suffer physical and socio-economic losses, their socio-cultural activities are adversely affected, and which exceed the capacity of the society to effectively cope with and manage such an event (AFAD, 2014). Disasters are the result of risky situations coming to pass. Diverse hazards have the potential to produce risky circumstances. These hazards can be natural, man-made, or a mixture of natural and man-made events (Castro et al., 2017). Not all-natural or human-induced events that occur are referred to as disasters (Coppola, 2006). The characterization of an event as a disaster should be evaluated in proportion to the level of the community affected by this event (Işık et al., 2012). The level of being affected also varies according to the characteristics of the settlement where the natural or human-induced event occurs, the resistance of the structures against disasters, and the disaster experiences of the people living in the region (Tercan, 2018). In addition, the inadequacy of factors such as disaster risk perception (DRP), disaster safety culture, disaster awareness, economic development, disaster education, and disaster preparedness levels of societies may cause natural or man-made events to cause disasters in some societies.

For the successful execution of disaster management, it is crucial to consider the public's perception of risks that may lead to disasters. Since risk perception is a subjective assessment of individuals against disaster and emergency hazards, there may be differences between individuals. In this context, a situation perceived as risky by one person may be considered as low risk or no risk by another person (Renn, 2004; Salvati et al., 2014). In order to enhance public awareness and preparedness, it is essential for professionals to effectively communicate risk information to the public. This includes understanding how the public will respond to hazards that have the potential to result in a disaster, establishing priorities, and managing available resources accordingly. By effectively communicating this information to the public, professionals can help develop a sense of community understanding and cooperation about disaster risks and improve disaster management efforts (Adelekan & Asiyanbi, 2016; Slovic et al., 1982). Disaster risk management is a critical process that should consider risk perception. When individuals fail to adequately perceive the risks and hazards in their living environment, they may take actions that cause disasters and emergencies, such as building houses in areas prone to floods and landslides or close to fault lines. Literature highlights the substantial influence of risk perception on disaster risk management. By integrating risk perception into management strategies, communities can be enabled to increase disaster awareness, encourage informed decision-making, and support actions that reduce disaster risks, ultimately building resilience to disasters within communities (Mañez et al., 2016). Risk knowledge, perception, and awareness are factors affecting how the public will respond to the risks that lead to emergencies and disasters. From this perspective, it is of great importance to take proactive measures and make necessary preparations to minimize the damages caused by disasters and emergencies (Roder et al., 2016).

This study discussed the concepts of culture and personality to investigate whether they affect disaster risk perception. Hofstede et al. (2010) assert that culture, which is always viewed as a communal phenomenon and consists of unwritten laws of social order, is expressed as the collective mind programming that distinguishes the individuals in a group of people from someone else. Since Hofstede's cultural dimensions "Uncertainty Avoidance" and "Collectivism" are evaluated within the scope of the study, only information about these dimensions is given. Uncertainty avoidance can be expressed as the level of threat that individuals forming the culture are under the influence of uncertainty and unpredictable situations. (Hofstede et al., 2010). People with high uncertainty avoidance do not want and avoid situations where the outcome cannot be clearly predicted (Karl, 2018). In societies with a high level of this dimension, individuals are mostly in favor of stability and avoid suspicious and risky situations that are uncertain and not

covered by written rules; they want written and formal rules, prefer established norms, and aim to secure themselves (Şişman, 2014).

Collectivism, on the other hand, is dominant in societies where people are integrated into strong and interrelated groups in society when they open their eyes to life and these individuals try to protect themselves by being loyal to these group members throughout their lives (Hofstede et al., 2010). In traditional societies, first-order relationships, harmony, consensus, group loyalty, and community spirit, i.e. collectivism, are dominant, while individualism is at the forefront in modern societies (Ağçoban, 2018).

Another variable used in this study is personality. One of the most common theories of personality is the "Five Factor personality scale" developed by Costa and McCrea (1992). The components of this scale are; "Extraversion, Conscientiousness, Neuroticism, Agreeableness, and Openness to experience". Extraverts, who are successful in initiating social relations between individuals and can show leadership qualities in the group they are in, enjoy coming together with other individuals and social interaction. They can immediately attract attention in their environment, have high energy levels, are talkative, approach events positively, cheerful and sociable behaviors (Costa & McCrae, 1992). The dimension of agreeableness compares traits such as compassion, trustworthiness, kindness, and warmth, which are important in people's communication with each other, with opposite traits (Goldberg, 1993). In the conscientiousness dimension, it seems to be naturally related to concepts such as foresight, planning, taking precautions, time management, and being reliable in jobs related to individuals' areas of responsibility (Chauvin et al., 2007). The neuroticism dimension includes negative mental characteristics of the individual such as anger, anxiety, stress, sadness, fragility, anger, and moodiness (Goldberg, 1993). In the openness to experience dimension, characteristics such as depth of imagination, curiosity, avoiding predictable situations, and being innovative come to the fore (Goldberg, 1993). Openness to experience is associated with original thinking and creativity, diversity of interests, and bravery. It arises from the breadth, depth, and permeability of awareness and the urge to extend and analyze recurring experiences (McCrae & Costa, 1987; McCrae, 1996).

In the literature, risk perception is used in different scientific fields such as finance (Nguyen et al., 2019), and tourism (Cui et al., 2016). In the context of disasters, earthquakes (Shrestha et al., 2018), floods (Lechowska, 2018), and landslides (Alcántara-Ayala and Moreno, 2016) risk perception studies can be given as examples. However, a general risk perception scale is needed for a holistic approach to disasters. Studies on the connection between culture and risk perception have also been conducted. There are studies (Douglas, 1966, 1978; Douglas and Wildavsky, 1982) that address risk perception as a cultural theory and play a leading role in these studies. (Oltedal et al., 2004). There are studies dealing with culture and risk perception (Habibnezhad & Esmaeili, 2016; Kim et al., 2016; Matanggaran, 2017). These studies provide a basis for hypotheses related to culture and disaster risk perception (DRP). Personality has also gained a place in different disciplines such as culture. In the literature, there are studies (Chauvin et al., 2007; Fyhri & Backer-Grøndahl, 2012; Fang & Yu, 2015; Jozi et al., 2018; Man & Chan, 2018; Oehler & Wedlich, 2018; Wang et al., 2016) that address the connections between the "Five-Factor Personality" scale and risk perception. Such studies provide a basis for the hypotheses to be formed. There are various studies on risk perception in the context of disasters in Türkiye (Ayvazoğlu et al., 2020; Güler, 2019; Kundak et al., 2014; Mızrak & Aslan, 2020; Özdemir, 2018; Yildiz et al., 2020; Yücel & Cengiz, 2020, etc.). However, there are no studies in terms of culture and personality variables in the context of factors that may affect or be related to disaster risk perception.

This study, it was aimed to determine the relationship between culture and personality factors and DRP through the DRP scale developed in line with the purpose of the study. For an effective fight against disasters, it is important to know the awareness of individuals about the hazards that may

cause disasters in their environment. In this context, measuring the DRP of individuals will shed light on studies such as disaster training, drills, disaster insurance procedures, disaster-resilient society, etc. to be conducted in the cities included in the study universe. Addressing the factors that may affect DRP in Türkiye in the context of culture and personality reveals the originality and importance of the study.

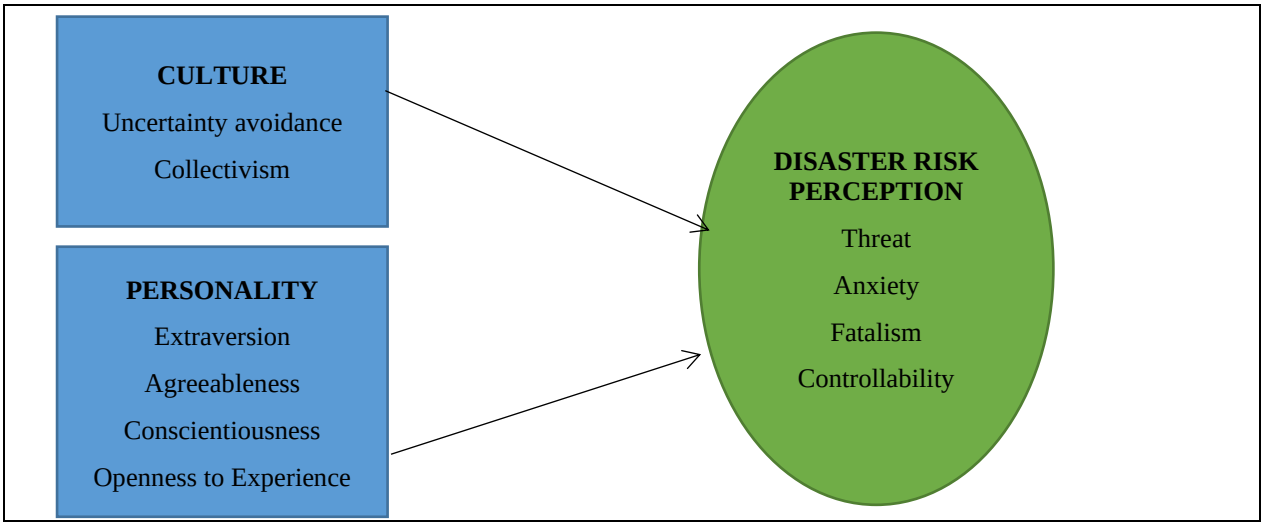
## 1. Materials and Method

For this study, firstly, it was aimed to develop a disaster risk perception scale (DRP) in line with the expert opinions and with the contribution of the authors by making use of various studies in the literature based on both psychometric and conceptual basis (Baytiyeh & Öcal, 2016; Ho et al., 2008; Özdemir, 2018; Slovic et al., 1982; Slovic, 1987; Xu et al., 2016; Xu et al., 2018; Yong et al., 2017). Then, it was aimed to determine the relationship between DRP and culture and personality. Personality scale developed by Benet-Martinez and John (1998) and adapted into Turkish by Sümer et al. (2005), a 44-item personality scale was used. As for the cultural scale, the individual cultural values scale, which was developed by Yoo et al. (2011) by using Hofstede (1980, 2001)'s five-dimensional culture scale, was used. The study of Benli (2019) was used for the culture scale questionnaire items. These two dimensions were used because it was thought that the dimensions of uncertainty avoidance and collectivism could be related to risk perception in terms of individual cultural values, and other cultural dimensions were thought to be mostly organizational items. Two cities in Türkiye were determined as the universe of the study. Since one of the variables is culture, in the criteria for determining the cities, provinces with high and low collectivism scores were grouped according to the results of the individualism-collectivism study conducted by Marcus et al. (2019) in Türkiye's 81 provinces. In addition, the number of earthquakes with a magnitude of 4.0 and above between 1900 and 2020 taken from the Kandilli Observatory website, and the province-based data of landslide/rockfall, flood events in Türkiye between 01.01.1950 and 01.06.2018 taken from the AFAD (2018) Disaster Management and Natural Disaster Statistics publication, were taken into account. In terms of both disaster data and culture, between Muğla and Van provinces, Muğla was one of the provinces with low collectivism scores. The province of Van, on the other hand, was among the provinces with high collectivism scores and the cities to be chosen for the study population were determined according to these criteria. Gümüşhane University Ethics Committee approval (2020/2) was obtained and necessary permissions were obtained from the governorships of both provinces. For the number of samples, 384 samples are considered sufficient for a population of 100,000 – 10,000,000 (Coşkun et al., 2017). In line with the data received via e-mail to obtain information from the Turkish Statistical Institute (bilgi@tuik.gov.tr), it was understood that 384 samples from the study population were sufficient for both provinces by making the distribution of individuals aged 18 and over in both cities by districts. In order to obtain more reliable results for both provinces, the survey study, which was prepared according to a 5-point Likert scale, was applied face-to-face to a total of 900 people, 450 from Muğla and 450 from Van.

### 1.1.Suggested Study Model

The link between personality and cultural factors and dimensions related to DRP was identified as the study model. In Figure 1, the suggested research model is displayed.

**Figure 1:** *Suggested Study Model*




### 1.2.Analysis of Data and Findings

Before analyzing the data, the questionnaires with limited returns, missing pages, and incorrect markings were removed and the data were analyzed with 811 questionnaires. The structural equation LISREL and the SPSS 25 package program were both utilized to analyze the data. The distribution of the survey participants within the framework of demographic information is as follows: Gender (female: 46.5%; male: 53.5%), Age Group (18-24: 32.8%; 25-31: 27.1%; 32-38: 19.2%; 39-45: 11.8%; 46 and above: 9.0%), Marital Status (Married: 49.7%; Single: 50.3%), Educational Status (Only literate: 2.1%; Primary school: 8.0%; Secondary school: 13.2%; High school: 24.0%; Associate degree: 28.1%; Bachelor's degree: 28.1%; Postgraduate: 3.5%), Disaster Experience (Never experienced a disaster: 33.4%; experienced a disaster: 66.6%), City of Residence (Muğla: 48.8%; Van: 51.2%).

For the disaster risk perception scale developed within the scope of the study, firstly, content validity was performed for 32 items in line with expert opinions (6 academicians and 1 AFAD branch manager). For the pre-test, a draft questionnaire was applied to 200 people in Muğla and Van provinces, and the alpha coefficient was found to be 0.86. KMO value was 0.83 and Bartlett's Test value was 0.000. For the post-test, in line with the data obtained from 811 samples, the KMO value was 0.88 and the Bartlett's Test value was 0.000. The alpha coefficient for the post-test was 0.87. As a result of the exploratory factor analysis performed for the normally distributed data, the disaster risk perception scale was determined using 4 factors (Threat: 7 items; Fatalism: 3 items; controllability 6 items; Anxiety:5 items) and 21 items. Scale items are expressed as Threat (e.g. "In a possible disaster in the region where I live, our quality of life will decrease"), Fatalism (e.g. "If it is written in our fate, we will be exposed to disaster"), controllability (e.g. "It is very important to insure homes and workplaces against disasters"), anxiety (e.g. "I think that the houses in my area will be damaged in a possible disaster"). The explained variance value of the scale was found to be 56.333. The dimensions and factor loadings of the DRP scale that emerged as a result of the exploratory factor analysis took values between 0.390 and 0.829.

When the normality distribution of the DRP scale is examined; the Skewness value was found to be -0.113, Kurtosis value was found as -0.272. Skewness and Kurtosis values between -1.0 and +1.0 are accepted for normal distribution (Huck, 2012). When the KMO values of the DRP were examined, it was found to be 0.892 and it is seen to be at a good level. Bartlett's Test $p=0.000$ value was found to be significant as $p<0.05$. DRP reliability analysis was analyzed by looking at

the Cronbach Alpha coefficient, which was found to be 0.861 at a sufficient level. After collecting data from the five-factor personality scale for the analysis of personality data, reverse coding was done for the items. In the LISREL program, the reliability coefficient was checked before proceeding to the validation process. Cronbach's Alpha value was determined as 0.807, then the total item correlation coefficients were analyzed. The five-factor personality scale was included in the analyses as four dimensions including "Extraversion, agreeableness, conscientiousness, and openness to experience" and 27 items after the items with an item-total correlation coefficient of less than 0.30 were eliminated. The re-reliability research revealed that the Cronbach Alpha score was 0.877. The personality scale's KMO value was revealed to be 0.897. This value is seen as good. Bartlett's Test value was determined to be significant as p=.000 p<.05.

The Cronbach Alpha coefficient of the culture scale was determined as 0.891 which is at a sufficient level. Bartlett's Test was found to be as p=.000 p<.05.

### 1.2.1.Confirmatory Factor Analysis (CFA) of Scales

CFA was performed on the structural equation LISREL model. First of all, when examining acceptable values for a model, it is necessary to look at several different fit values. The most used values in the literature are Chi-Square ($\chi 2$), RMSEA, CFI, and NFI (Şimşek, 2007). Excellent and acceptable ranges for these values (Şimşek, 2007; Gürbüz and Şahin, 2017; Seçer, 2018) are given in Tables 1, 2, 3, 4. Within the scope of the study, the CFA of the four factors and 21 items of the DRP scale in the structural equation LISREL 8.7 program was started. As a result of the study, the DRP Scale was confirmed as four factors and 21 items as a result of CFA. Table 1 shows the fit indices of the CFA results.

**Table 1:** *DRP Scale CFA Compliance Indices*

| Compliance Criteria | Perfect Fit | Acceptable Fit | Disaster Risk Perception Scale CFA |
|---|---|---|---|
| $\chi 2$/df | $\chi 2$/df<3 | $\chi 2$/df<5 | 3.64* |
| RMSEA | RMSEA<0.050 | RMSEA<0.080 | 0.057* |
| CFI | 0.95<CFI | 0.90<CFI | 0.97* |
| NFI | 0.95<NFI | 0.90<NFI | 0.95* |

As a result of the personality scale data analysis, four factors were subjected to CFA. Accordingly to the CFA, the personality scale complied with the criteria specified in Table 2 and was confirmed.

**Table 2:** *Personality Scale CFA Compliance Indices*

| Compliance Criteria | Perfect Fit | Acceptable Fit | Personality Scale CFA |
|---|---|---|---|
| $\chi 2$/df | $\chi 2$/df<3 | $\chi 2$/df<5 | 3.53* |
| RMSEA | RMSEA<0.050 | RMSEA<0.080 | 0.056* |
| CFI | 0.95<CFI | 0.90<CFI | 0.95* |
| NFI | 0.95<NFI | 0.90<NFI | 0.93* |

CFA of the culture scale consisting of two factors and 11 items was performed. The culture scale CFA complied with the criteria specified in Table 3 and was validated.

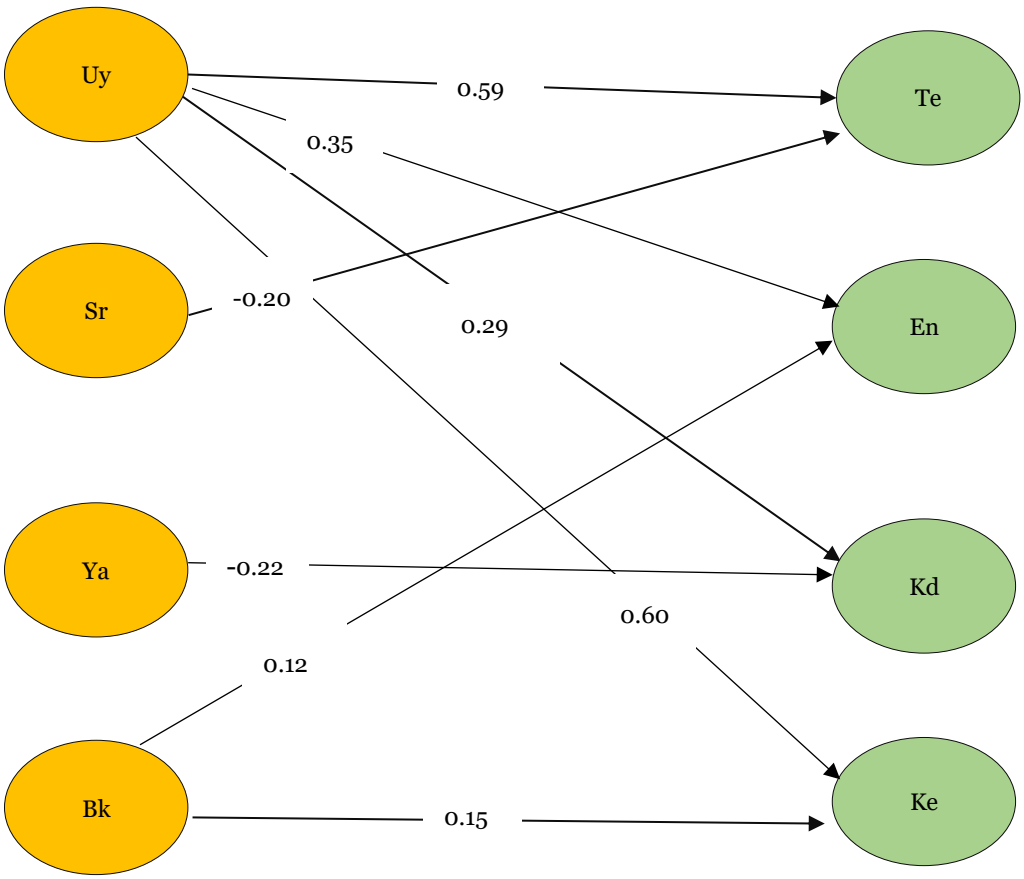
**Table 3:** *Culture Scale CFA Compliance Indices*

| Compliance Criteria | Perfect Fit | Acceptable Fit | Culture Scale CFA |
|---|---|---|---|
| χ2/df | χ2/df<3 | χ2/df<5 | 4.48* |
| RMSEA | RMSEA<0.050 | RMSEA<0.080 | 0.066* |
| CFI | 0.95<CFI | 0.90<CFI | 0.98* |
| NFI | 0.95<NFI | 0.90<NFI | 0.97* |

### 1.2.2.Findings Related to the Study Model

With the LISREL software, the study model was analyzed using a set of hypotheses. "Threat, Controllability, Anxiety, and Fatalism" dimensions of the DRP scale were determined as dependent variables, "Collectivism and Uncertainty Avoidance" dimensions of the culture scale, and "Extraversion, Agreeableness, Conscientiousness, and Openness to Experience" dimensions of the personality scale were determined as independent variables, also the hypotheses shown in Table 5 were tested.

**Figure 2:** *Study Model*




Chi-Square=4346.86, df=1066, p-value=0.00000, RMSEA=0.062

As a result of the analysis, a direct relationship was found between the agreeableness (Uy) dimension of the personality and the threat (Te), anxiety (En), fatalism (Kd), and controllability (Ke). A direct relationship was found between the dimension of conscientiousness and the

dimension of threat, and between the dimension of openness to experience and the dimension of fatalism. A direct relationship was found between the uncertainty avoidance (Bk) of culture and the anxiety and controllability dimensions of DRP. There was no direct or mediated relationship between personality's extraversion (Dd) and culture's collectivism (Kl) dimensions and DRP dimensions. As a result of the analyzes made within the framework of the study model, the compliance indexes are given in Table 4.

**Table 4:** *Study Model Compliance Indices*

| Compliance Criteria | Perfect Fit | Acceptable Fit | Mediator Model |
|---|---|---|---|
| $\chi 2/df$ | $\chi 2/df<3$ | $\chi 2/df<5$ | 4.07* |
| RMSEA | RMSEA<0.050 | RMSEA<0.080 | 0.062* |
| CFI | 0.95<CFI | 0.90<CFI | 0.94* |
| NFI | 0.95<NFI | 0.90<NFI | 0.92* |

When the fit indices related to the study model are examined in Table 4, it is understood that the results obtained are at acceptable levels.

### 1.2.3.Study Model Hypothesis Results

The structural equation model LISREL software tested the model developed as part of the research. The hypothesis results are shown in Table 5. Detailed information about the results will be given in the discussion and conclusion sections of the study.

**Table 5:** *Hypotheses and Results Regarding the Study Model*

| No | Hypothesis Name | Result | Direction | $R^2$ |
|---|---|---|---|---|
| H1 | There is a relationship between the uncertainty avoidance dimension and the threat dimension. | REJECTED | - | - |
| H2 | There is a relationship between the uncertainty avoidance dimension and the anxiety dimension. | ACCEPTED | Positive | 0.12 |
| H3 | There is a relationship between the uncertainty avoidance dimension and the controllability dimension. | ACCEPTED | Positive | 0.15 |
| H4 | There is a relationship between the dimension of uncertainty avoidance and the dimension of fatalism. | REJECTED | - | - |
| H5 | There is a relationship between the dimension of collectivism and the dimension of threat. | REJECTED | - | - |
| H6 | There is a relationship between the collectivism dimension and the anxiety dimension. | REJECTED | - | - |
| H7 | There is a relationship between the collectivism dimension and the controllability dimension. | REJECTED | - | - |
| H8 | There is a relationship between the dimension of collectivism and the dimension of fatalism. | REJECTED | - | - |
| H9 | There is a relationship between the dimension of extraversion and the dimension of threat. | REJECTED | - | - |
| H10 | There is a relationship between the extraversion dimension and the anxiety dimension. | REJECTED | - | - |
| H11 | There is a relationship between the extraversion dimension and the controllability dimension. | REJECTED | - | - |
| H12 | There is a relationship between the extraversion dimension and the fatalism dimension. | REJECTED | - | - |
| H13 | There is a relationship between the agreeableness dimension and the threat dimension. | ACCEPTED | Positive | 0.59 |
| H14 | There is a relationship between the agreeableness dimension and the anxiety dimension. | ACCEPTED | Positive | 0.35 |
| H15 | There is a relationship between the dimension of agreeableness and the dimension of controllability. | ACCEPTED | Positive | 0.60 |
| H16 | There is a relationship between the dimension of agreeableness and the dimension of fatalism. | ACCEPTED | Positive | 0.29 |
| H17 | There is a relationship between the dimension of conscientiousness and the dimension of threat. | ACCEPTED | Negative | -0.20 |
| H18 | There is a relationship between the dimension of conscientiousness and the dimension of anxiety. | REJECTED | - | - |
| H19 | There is a relationship between the dimension of conscientiousness and the dimension of controllability. | REJECTED | - | - |
| H20 | There is a relationship between the dimension of conscientiousness and the dimension of fatalism. | REJECTED | - | - |
| H21 | There is a relationship between the dimension of openness to experience and the dimension of threat. | REJECTED | - | - |
| H22 | There is a relationship between the dimension of openness to experience and the dimension of anxiety. | REJECTED | - | - |
| H23 | There is a relationship between openness to experience and controllability. | REJECTED | - | - |
| H24 | There is a relationship between the dimension of openness to experience and the dimension of fatalism. | ACCEPTED | Negative | -0.22 |

## 2. Discussion

Within the framework of the hypotheses related to the study model, the relationship between the uncertainty avoidance dimension and the DRP's anxiety dimension (0.12 value and positive direction), and the controllability dimension (0.15 value and positive direction) were determined.

No relationship was found between the dimensions of threat and fatalism. When viewed from the framework of this result, as the level of uncertainty avoidance increases, the levels of anxiety and controllability increase. Matanggaran (2017) found a positive relationship between the uncertainty avoidance dimension of culture and climate change risk perception. Kim et al. (2016) found that people with medium and high uncertainty avoidance scores regarding tourist travel risk perception have higher risk perception than people with low scores. Habibnezhad and Esmaeili (2016), regarding the risk perception of construction workers, found that people with a higher uncertainty avoidance dimension have a higher risk perception of accidents that may lead to medical accident injuries.

In the study model, no direct or mediating relationship was found between the collectivism dimension of the culture scale and the DRP dimensions. Matanggaran (2017) found a positive relationship between climate change risk perception and the collectivism dimension of culture. Habibnezhad and Esmaeili (2016) found that people with a higher collectivism dimension had a higher risk perception about accidents that could lead to medical case injuries.

In the study model, no direct or mediated relationship was found between the extraversion dimension of personality and the dimensions of DRP. In the literature review on this subject; In their study, Oehler and Wedlich (2018) found that the dimension of extraversion affects the risk attitude of individuals, and individuals with a high extraversion aspect are less risk-averse. Wang et al. (2016) found in their study that extraversion has a positive relationship with risk tendency, and risk tendency negatively affects risk perception. Man and Chan (2018) found in their study that extraversion negatively affects risk perception.

In the study model, the hypotheses that were tested that the agreeableness dimension of the personality scale was related to the DRP dimensions of threat (0.59), anxiety (0.35), controllability (0.60), and fatalism (0.29) were accepted. According to these values, it shows that as the level of agreeableness increases, the perceived threat and anxiety about disasters also increase. It shows that individuals with a dominant aspect of agreeableness have an increased belief that disasters can be controlled or disaster damages can be reduced thanks to the measures to be taken. It also shows that individuals with the dimension of agreeableness also have a fatalistic understanding of disasters. When the literature is examined within the framework of these hypotheses; Fang and Yu (2015), in their studies on climate change risk perception, found that the dimension of agreeableness showed a positive correlation with environmental behavior and environmental characteristics, and they stated that individuals' risk perception positively affects their environmental values, environmental attitudes and environmental behaviors about climate change. In this context, it is understood that there is a positive relationship between the dimension of agreeableness and the perception of climate change risk. Jozi et al. (2018) found a positive relationship between risk perception and agreeableness in their study. However, in their study on personality and risk perception in transportation, Fyhri and Backer-Grøndahl (2012) found a negative correlation between the agreeableness dimension and risk perception.

In the study model, the hypothesis that there is a relationship between the conscientiousness dimension of the personality scale and the threat dimension of the DRP was accepted. This value, which has a negative direction and a value of-0.20, shows that the perception of threat decreases as the conscientiousness score increases. In other words, conscientious people reduce the perception of threat by acting cautiously. There was no relationship between the dimension of conscientiousness and anxiety, fatalism, and controllability. In the literature review made within the framework of these hypotheses; Jozi et al. (2018) and Man and Chan (2018) found a positive relationship between risk perception and conscientiousness in their studies. Wang et al. (2016) found that negative relationship between risk tendency and conscientiousness.

In the study model, the hypothesis that there is a relationship between the openness to experience dimension of the personality scale and the fatalism dimension was accepted. Its direction was negative and its value was -0.22. Since individuals who are open to experience tend to exhibit curiosity and a passion for adventure, it can be expected that they tend to avoid adopting a fatalistic approach. This value shows that as individuals' openness to experience score increases, their perception of fatalism about disasters decreases. In the literature review made within the framework of these hypotheses; Fang and Yu (2015) found a positive relationship between climate change risk perception and the dimension of openness to experience. Wang et al. (2016) could not find a relationship between the dimension of openness to experience and risk tendency. Man and Chan (2018) concluded in their study that the openness to experience dimension negatively affects risk perception.

## 3. Conclusion and Recommendations

Based on the literature review conducted for this study, a theoretical study model was created in which the dimensions of DRP are dependent variables, and culture and personality dimensions are independent variables. The results were obtained by testing this model in the structural equation program and determining the relationships between the factors.

A positive relationship was found between uncertainty avoidance and anxiety and controllability dimensions of the DRP scale. When viewed from the framework of this explanation, as the level of uncertainty avoidance increases, the anxiety levels of individuals about disasters and the thought that disasters can be controlled with measures to be taken also increase as expected. Since fatalism is, in a way, uncertainty, it could be expected to be related to this dimension, but no relationship was found. At the same time, a directly proportional relationship with the threat dimension was expected, but nothing was not detected. When the average uncertainty avoidance score of the participants in the study is evaluated, it can be said that their level of uncertainty avoidance is high.

In the framework of the literature, it was predicted that the dimension of collectivism might be related to the dimensions of DRP. However, no relationship was found within the scope of the study. The fact that the collectivism dimension of the people participating in the study is above the average indicates that the participants have a collectivist tendency. It may be expected that collectivist individuals have high-risk perceptions for disasters, both for themselves and for the group or society they belong to, but no relationship was found between them in the study.

In the research conducted within the scope of the study model, no relationship was found between the extraversion dimension of personality and the dimensions of DRP. The extraversion dimension scores of the people participating in the study were found to be above average. Although a relationship is expected between risk perception due to the characteristics of extroverted individuals, no relationship was found between risk perception dimensions in this study.

A positive relationship was found between agreeableness and all dimensions of the DRP. As the degree of agreeableness increases, the perceived threat, anxiety, controllability, and fatalism about disasters increase. Considering the framework of the definition of agreeableness, relations between this dimension and the DRP were found as expected. When the average scores of the agreeableness dimension of the participants in the study are evaluated, it is understood that the participants show a tendency to agreeable above the average.

A negative relationship was found between conscientiousness and threat which is one of the dimensions of DRP. This result shows that as the conscientiousness score increases, the perception of threat decreases. In other words, responsible individuals reduce the perception of threat by acting cautiously. Considered within the framework of responsibility characteristics, it could be expected to be related to the controllability dimension of responsible individuals. No relationship was detected with other dimensions. When the average scores of the conscientiousness dimension

of the people participating in the study are evaluated, it shows that the conscientiousness level of the participants is above average.

A negative relationship was found between openness to experience and the fatalism dimension. Since individuals who are open to experience are inquisitive and adventurous, they can be expected to stay away from a fatalistic approach. This result shows that as individuals' openness to experience score increases, their perception of fatalism about disasters decreases. No relationship was found between the dimension of openness to experience and other dimensions of DRP. When the average scores on the openness to experience dimension of the participants in the study are evaluated, it shows that the tendency of the participants to openness to experience is above average.

When analyzed in terms of culture scale dimensions, a statistically significant difference was found regarding the uncertainty avoidance dimension and residence variable. Although the averages of both provinces are high, the province of Muğla stands out statistically. When evaluated in terms of collectivism, the collectivism score of both provinces was found to be high. Although Van has a more collectivist score as expected, there is no statistical difference between the two provinces.

This study can provide data to disaster managers for studies such as disaster awareness training, disaster volunteering, and community-based disaster projects in the context of disaster damage reduction and disaster preparedness in the process of creating a more resilient society to disasters. In addition, these studies can examine the relationship between DRP and culture and personality through other cultural and personality theories, taking into account the culture and personality traits. In addition, studies can be conducted in terms of different factors that may affect or be related to the DRP. The contribution of DRP to risk management, namely the relationships between risk and mitigation and preparedness can be examined. Studies can be conducted on the attitudes and behavior styles of individuals at the time of disaster according to their personality structures.

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**References**

AFAD. (2014). *Açıklamalı afet yönetimi terimleri sözlüğü*. T.C. Başbakanlık Afet ve Acil Durum Yönetimi Başkanlığı. https://www.afad.gov.tr/kurumlar/afad.gov.tr/3495/xfiles/sozluk.pdf (access date: 22.09.2019)

AFAD. (2018). *Türkiye'de afet yönetimi ve doğa kaynaklı afet istatistikleri*. https://www.afad.gov.tr/kurumlar/afad.gov.tr/35429/xfiles/turkiye_de_afetler.pdf (access date: 12.08.2019)

Ağçoban, S. (2018). İmam hatip liselerinde okutulan ders kitaplarının bireycilik ve kolektivizm açısından incelenmesi. *Talim: Journal of Education in Muslim Societies and Communities, 2*(1), 53-83. https://dx.doi.org/10.12738/talim.2018.1.0104

Adelekan, I. O., & Asiyanbi, A. P. (2016). Flood risk perception in flood-affected communities in Lagos, Nigeria. *Nat Hazards, 80,* 445–469. doi 10.1007/s11069-015-1977-2

Alcántara-Ayala, I., & Moreno, A. R. (2016). Landslide risk perception and communication for disaster risk management in mountain areas of developing countries: a Mexican foretaste. *J. Mt. Sci. 13*(12), 2079-2093. doi: 10.1007/s11629-015-3823-0.

Ayvazoğlu, G., Çekiç, M. ve Yücel, H. (2020). Hatay Mustafa Kemal Üniversitesi öğrencilerinin afet risk algısı ve afete hazırlık durumlarının değerlendirilmesi. *SBedergi, 4*(7), 85-97.

Baytiyeh, H., & Öcal, A. (2016). High school students' perceptions of earthquake disaster: A comparative study of Lebanon and Turkey. *International Journal of Disaster Risk Reduction, 18,* 56–63. doi: http://dx.doi.org/10.1016/j.ijdrr.2016.06.004.

Benet-Martinez, V., & John, O. P. (1998). Los cinco grandes across cultures and ethnic groups: Multitrait multimethod analyses of the big five in Spanish and English. *Journal of Personality and Social Psychology, 75*(3), 729-750.

Benli, B. (2019). *A comparative study among Turkish and American consumers on the relationship between cultural dimensions and the two important outcomes of consumer society: Conspicuous consumption and online compulsive buying behavior*. [Doktora Tezi, Işık Üniversitesi]. YÖK Ulusal Tez Merkezi Veri Tabanı (579418).

Castro, C.- P., Sarmiento, J.-P., Edwards, R., Hoberman, G., & Wyndham, K. (2017). Disaster risk perception in urban contexts and for people with disabilities: case study on the city of Iquique (Chile). *Nat Hazards, 86,* 411–436. doi: 10.1007/s11069-016-2698-x

Chauvin, B., Hermand, D., & Mullet, E. (2007). Risk perception and personality facets. *Risk Analysis, 27*(1), 171-185. doi:10.1111/j.1539-6924.2006.00867.x

Costa, P. T., & McCrae, R. R. (1992). *Neo PI-R. professional manual*. Odessa, Fl: Psychological Assessment Resources, Inc.

Coşkun, R., Altunışık, R. ve Yıldırım, E. (2017). *Sosyal bilimlerde araştırma yöntemleri: SPSS uygulamalı*, (9. Baskı). Sakarya: Sakarya Yayıncılık.

Coppola, D. P. (2006). *Introduction to international disaster management.* Butterworth-Heinemann, Burlington, USA.

Cui, F., Liu, Y., Chang, Y., Duan, J., & Li, J. (2016). An overview of tourism risk perception. *Nat Hazards, 82,* 643–658. doi: 10.1007/s11069-016-2208-1

Douglas, M. (1966). *Purity and Danger: an analysis of concepts of pollution and taboo*. London and New York: Routledge and Keagan Paul.

Douglas, M. (1978). *Cultural bias* (No. 35). Royal Anthropological Institute.

Douglas, M., & Wildavsky, A. (1982). *Risk and culture: An essay on the selection of technical and environmental dangers.* Berkeley and Los Angeles, California: University of California Press.

Fang, S. C., & Yu, T. Y. (2015). A risk perception model of climate change for university students. *Journal of Baltic Science Education, 14*(3), 339-350.

Fyhri, A., & Backer-Grøndahl, A. (2012). Personality and risk perception in transport. *Accident Analysis and Prevention, 49,* 470– 475, doi:10.1016/j.aap.2012.03.017

Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48*(1), 26-34.

Gürbüz, S. ve Şahin, F. (2017). *Sosyal bilimlerde araştırma yöntemleri: felsefe-yöntem-analizi*, (4. Baskı). Ankara: Seçkin Yayıncılık.

Güler, İ. (2019). D*üzce kentinde risk algısının yer bağlılığı ile ilişkisi.* [Yüksek Lisans Tezi, Düzce Üniversitesi]. YÖK Ulusal Tez Merkezi Veri Tabanı (588316).

Habibnezhad, M., & Esmaeili, B. (2016). The influence of individual cultural values on construction workers' risk perception. 52nd ASC Annual International Conference Proceedings.

Ho, M. C., Shaw, D., Lin, S., & Chiu, Y. C. (2008). How do disaster characteristics influence risk perception?. *Risk Analysis: An International Journal, 28*(3), 635-643. doi: 10.1111/j.1539-6924.2008.01040.x

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values.* Baverly Hills, California: Sage.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*, (2nd ed.). Thousand Oaks, California: Sage Publications.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of mind*, (Revised and Expanded Third Edition). New York: McGrawHill.

Huck, S. W. (2012). *Reading statistics and research*, (Sixth edition). Boston: Pearson.

Işık, Ö., Aydınlıoğlu, H. M., Koç, S., Gündoğdu, O., Korkmaz, G. ve Ay, A. (2012). Afet yönetimi ve afet odaklı sağlık hizmetleri. *Okmeydanı Tıp Dergisi, 28*(Ek sayı 2), 82-123. doi:10.5222/otd.supp2.2012.082

Jozi, E. S., Entezar, R. K., Najafi, Z., Eskandari, S., Taj, L., Seyedalinaghi, S., et al. (2018). Relation between personality dimensions, risk perception and coping strategies in people living with hiv. *Journal of International Translational Medicine, 6*(2), 80-86. doi: 10.11910/2227-6394.2018.06.02.06

Karl, M. (2018). Risk and uncertainty in travel decision-making: Tourist and destination perspective. *Journal of Travel Research, 57*(1), 129–146. doi: 10.1177/0047287516678337

Kim, H., Schroeder, A., & Pennington-Gray, L. (2016). Does culture influence risk perceptions? *Tourism Review International, 20*, 11-28. doi: http://dx.doi.org/10.3727/154427216X14581596798942

Kundak, S., Türkoğlu, H., & İlki, A. (2014). Risk perception in Istanbul: An earthquake-prone city. *A| Z ITU Journal of the Faculty of Architecture, 11*(1), 117-137.

Lechowska, E. (2018). What determines flood risk perception? A review of factors of flood risk perception and relations between its basic elements. *Natural Hazards, 94*,1341-1366. doi: https://doi.org/10.1007/s11069-018-3480-z.

Man, K. S. S., & Chan, A. H. S. (2018). Influence of personality and safety climate on risk perception of hong kong construction workers. *Proceedings of the International MultiConference of Engineers and Computer Scientists 2018 Vol II. IMECS 2018, March* 14-16, Hong Kong.

Mañez, M., Carmona, M., Haro, D., & Hanger, S. (2016). (Ed. Aerts, J. & Mysiak, J.). *Risk perception. In novel multi-sector partnerships in disaster risk management. Results of the enhance project*. Commissioned EU FP7 Project ENHANCE: Brussels, Belgium, 51–67.

Marcus, J., Kahraman, F., Su, S. ve Fritzsche, B.A. (2019). *Türkiye'nin 81 ilinde bireycilik ve toplulukçuluk: Türkiye'deki mikrotoplumlar. 27. ulusal yönetim ve organizasyon kongresi* içinde ( ss.756-769). 18-20 Nisan 2019/Antalya.

Matanggaran, V. (2017). *Explaining risk perception of climate change in Indonesia through cultural dimension of uncertainty avoidance, collectivism, and long-term orientation.* Master Thesis. Faculty of Behavioural, Management and Social Sciences Department of Psychology of Conflict, Risk and Safety. University of Twente.

McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52*(1), 81-90.

McCrae, R. R. (1996). Social consequences of experiential openness. *Psychological Bulletin, 120*(3), 323-337.

Mızrak, S., & Aslan, R. (2020). Disaster risk perception of university students. *Risk, Hazards and Crisis in Public Policy, 11*(4), 411–433. doi:10.1002/rhc3.12202

Nguyen, L., Gallery, G., & Newton, C. (2019). The joint influence of financial risk perception and risk tolerance on individual investment decision-making. *Accounting and Finance, 59*, 747–771. doi: 10.1111/acfi.12295.

Oehler, A., & Wedlich, F. (2018). The relationship of extraversion and neuroticism with risk attitude, risk perception, and return expectations. *Journal of Neuroscience, Psychology, and Economics, 11*(2), 63–92. Doi: https://doi.org/10.1037/npe0000088

Oltedal, S., Moen, B.-E., Klempe, H., & Rundmo, T. (2004). Explaining risk perception. An evaluation of cultural theory. Trondheim: Rotunde, no: 85.

Özdemir, A. (2018). *Toplumun afet risk algısı ve afete hazırlıklı olma durumu: Kocaeli ili örneği*. [Yüksek Lisans Tezi, Gümüşhane Üniversitesi]. YÖK Ulusal Tez Merkezi Veri Tabanı (508189).

Renn, O. (2004). Perception of risks. *The Geneva Papers on Risk and Insurance, 29*(1), 102–114.

Roder, G., Ruljigaljig, T., Lin, C.-W., & Tarolli, P. (2016). Natural hazards knowledge and risk perception of Wujie indigenous community in Taiwan. *Nat Hazards, 81*, 641–662. doi 10.1007/s11069-015-2100-4

Salvati, P., Bianchi, C., Fiorucci, F., Giostrella, P., Marchesini, I., & Guzzetti, F. (2014). Perception of flood and landslide risk in Italy: a preliminary analysis. *Nat. Hazards Earth Syst. Sci., 14*, 2589–2603. doi:10.5194/nhess-14-2589-2014

Seçer, İ. (2018). *Psikolojik test geliştirme ve uyarlama süreci: SPSS ve LISREL uygulamaları*, (2. Baskı). Ankara: Anı Yayıncılık.

Shrestha, S. R., Sliuzas, R., & Kuffer, M. (2018). Open spaces and risk perception in post-earthquake Kathmandu city. *Applied Geography, 93*, 81–91. doi: https://doi.org/10.1016/j.apgeog.2018.02.016.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1982). Why study risk perception? *Risk analysis, 2*(2), 83-93.

Slovic, P. (1987). Perception of risk. *Science, 236*, 280-285.

Sümer, N., Lajunen,T., & Türker, O. (2005). *Big five personality traits as the distal predictors of road accident involvement. Underwoo*d, G. (Der.). Traffic and Transport Psychology. USA: Elsevier Ltd. 215-227.

Şimşek, Ö. F. (2007). Yapısal eşitlik modellemesine giriş: Temel ilkeler ve LISREL uygulamaları. Ankara: Ekinoks Yayınları.

Şişman, M. (2014). Örgütler ve kültürler, (4. Baskı). Ankara: Pegem Akademi.

Tercan, B. (2018). Türkiye'de afet politikaları ve kentsel dönüşüm. *Abant Kültürel Araştırmalar Dergisi, 3*(5), 102-120.

Wang, C. M., Xu, B. B., Zhang, S. J., & Chen, Y. Q. (2016). Influence of personality and risk propensity on risk perception of Chinese construction project managers. *International Journal of Project Management, 34*, 1294–1304. doi: http://dx.doi.org/10.1016/j.ijproman.2016.07.004

Xu, D., Peng, L., Su, C., Liu, S., Wang, X., & Chen, T. (2016). Influences of mass monitoring and mass prevention systems on peasant households' disaster risk perception in the landslide-threatened Three Gorges Reservoir area, China. *Habitat International, 58,* 23-33. doi: https://doi.org/10.1016/j.habitatint.2016.09.003

Xu, D., Liu, E., Wang, X., Tang, H., & Liu, S. (2018). Rural households' livelihood capital, risk perception, and willingness to purchase earthquake disaster insurance: Evidence from Southwestern China. *Int. J. Environ. Res. Public Health, 15,* 1319. doi:10.3390/ijerph15071319.

Yildiz, A., Teeuw, R., Dickinson, J., & Roberts, J. (2020). Children's earthquake preparedness and risk perception: A comparative study of two cities in Turkey, using a modified PRISM approach. *International journal of disaster risk reduction, 49,* 101666. doi: https://doi.org/10.1016/j.ijdrr.2020.101666

Yoo, B., Donthu, N., & Lenartowicz, T. (2011). Measuring Hofstede's five dimensions of cultural values at the individual level: Development and validation of CVSCALE. *Journal of International Consumer Marketing, 23*(3-4), 193-210. doi: https://doi.org/10.1080/08961530.2011.578059

Yong, A. G., Lemyre, L., Pinsent, C., & Krewski, D. (2017). Risk perception and disaster preparedness in immigrants and Canadian-born adults: Analysis of a national survey on similarities and differences. *Risk Analysis, 37*(12), 2321- 2333. doi: 10.1111/risa.12797

Yücel, H., & Cengiz, S. (2020). Assessment of the relationship between the risk perception and preparedness attitudes of search & rescue and firefighting teams against event site hazards in CBRN events: Adana province case. *Gümüşhane Üniversitesi Sosyal Bilimler Dergisi, 11*(Ek), 347-354.