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"Can anyone hear me?": The evaluation of human behaviour during earthquakes in Turkey

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ABSTRACT

This study seeks to examine how individuals behave in indoor and outdoor environments during an earthquake. Utilizing a nested multiple-case design, the research focused on the earthquakes that struck the İzmir and Elazığ provinces of Turkey in 2020 and 2021 as separate cases. Data were collected through document review, specifically analyzing earthquake video footage, and the analysis was conducted using an observation form. The study reviewed 20 video recordings related to the Elazığ earthquake (6 indoor, 10 outdoor, and 4 outdoor) and 37 videos from the İzmir earthquake (10 indoor, 22 outdoor, and 5 outdoor). The information gathered from the footage was transformed into findings through descriptive statistical analyses, including frequency and cross-table analyses. The results indicate that individuals often display similar behaviors during an earthquake. It was found that people typically move toward doors or balconies, remain still, take protective stances, and turn to the others during such events. Their reactions may range from panic to calmness, control, and confusion. Notably, most individuals did not take any belongings with them or opted for their phones or wallets. People were observed to freeze, walk, run, or move in a manner that suggested crowding.

KEYWORDS

Earthquake; human behavior; situation analysis

Introduction

Earthquakes are among the most devastating natural disasters, resulting from the natural movements of the Earth. These events occur worldwide in various magnitudes, with countries situated on active fault lines experiencing them more frequently and suffering serious consequences. Each year, hundreds of thousands of people lose their lives or sustain severe injuries due to earthquakes. In particularly large quakes, individuals trapped under rubble often face limb loss, physical disabilities, and long-lasting health issues. Furthermore, the economic repercussions of earthquakes extend to the national level; damage to infrastructure, loss of workforce, and economic stagnation can have long-term adverse effects on development. However, the impact of earthquakes is not confined to physical and economic dimensions. Survivors often grapple with post-disaster trauma, leading to psychological disorders such as post-traumatic stress disorder (PTSD), depression, and anxiety. These

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psychological effects can significantly hinder an individual's social life, functionality, and overall quality of life, often necessitating extended rehabilitation and psychological support. Thus, the actions to protect the material and psychological endurance of the country during and after an earthquake at both collective and individual levels have been one of the most crucial topics of the countries.

Protective measures during an earthquake vary depending on a country's geographical location, the frequency of earthquakes, building standards, and local government policies. However, many countries implement similar protective measures, especially by requisites of law. First, countries establish specific building standards and regulations for constructing earthquake-resistant buildings (Coburn & Spence, 2002). Building inspections are conducted, and non-compliant buildings may be required to be strengthened or demolished. Another measure is using early warning systems to alert the public during an earthquake. These systems can detect the onset of an earthquake and notify people, helping them move to safe areas. Establishing emergency response teams and training them to provide safety and healthcare services is also one of the most commonly implemented policies (Coburn & Spence, 2002). All measures taken during an earthquake are based on—be universal or national—institutional policies offered and prepared before the earthquake occurs. However, these measures often ignore the individual behaviors and emotions of human beings during earthquakes, which are crucial for withstanding the catastrophic effects of earthquakes (Bolton, 1993; Rahimi, 1992). Raising awareness about earthquakes, providing education, fostering community solidarity, and integrating this knowledge into daily life is essential. This is especially important in terms of promoting "citizenship consciousness."

Indeed, the recommended actions to take during an earthquake vary among different countries. While some advise staying inside and using the "drop, cover, and hold" technique, others recommend leaving the building and moving to an open area (GeoHazards International, 2015). There is no consensus on the best course of action during an earthquake, and this lack of agreement is due to differences in earthquake policies among developed, developing, and underdeveloped countries (Shapira et al., 2018). However, it is also essential to highlight the impact of human behavior, independently of institutional and legal issues, such as the need for well-designed and earthquake-resistant buildings. Nevertheless, this does not mean diminishing the importance of building codes and construction materials but rather specifically emphasizing that human behavior and cultural factors depend significantly on the "specific circumstances and moment of the earthquake." Understanding the "immediate" behavior of humans can help in creating more sustainable policies to mitigate the negative impact of earthquakes, including both physical and social aspects. Furthermore, as Rahimi puts it just in 1992, there are ample shreds of evidence and literature that "non-structural elements and building contents" can cause death and injuries. Many pieces of stuff indoors, such as glass furniture, fixtures, chemical substances, etc., might be hazardous to people, especially during shaking.

Thus, numerous studies have examined more human behavior before, during, and after earthquakes, focusing on the social, psychological, and behavioral effects. In their investigation of the six office buildings affected by the 1979 Imperial Valley earthquake, Arnold et al. (1982) have found that people's adaptive responses predominated. The rates of "first action" taken by people were as follows: getting under a desk (36%), standing in the doorway (15%), staying put (37%), going into the main corridor (3%), leaving the building (2%), dodging to avoid falling objects (8%), and other actions (14%). Moreover, it has been observed that

(56%) of people tended to evacuate the building when the earthquake shaking stopped. Alexander (1990) has conducted a study to understand human behavior following an earthquake in Naples, Italy, on 23 November 1980. Inferring from the data he collected from students through interviews and his own experiences, people indoors panicked in flight behavior and ran aimlessly toward exit doors. Ohta and Ohashi (1985) have put forth through their studies on six Japanese earthquakes that people's responses are significantly related to seismic activity. Besides, emotional and behavioral performances are determined by and with environmental and personal features. These emotional, social, and behavioral components in the case of onset, during, and after an earthquake began to be considered more seriously after these studies spread.

In examining the 1987 Whittier Narrows earthquake in southern California, US, Goltz et al. (1992) have elucidated that both social scientists bear responsibility as seismic safety planners do. Putting under the scope the question of whether there are cross-cultural variations in people's responses during earthquakes, they systemically collected survey data from people who experienced earthquakes. Primary quantitative outcomes of the study have revealed that while (40%) of the people in structures took cover in a doorway, hall, or under furniture, (20%) of people froze (9% at home, 20% at work). (46%) of participants in cars pulled over and stopped, but (43%) continued driving. Women and those more afraid of earthquakes were more likely to take shelter. Furthermore, and more importantly, the presence of other adults hindered protective actions, while the presence of children increased it. The likelihood of individuals obtaining insurance coverage is significantly influenced by factors such as higher education levels, increased income, enhanced earthquake preparedness, and prior earthquake experience, along with a heightened sense of fear (Goltz et al., 1992). Building on their recent study (1992) distinctly intertwined with social sciences, Bourque et al. (1993) have scrutinized the 1989 Loma Prieta earthquake in northern California, US. They associated the relationship between human behaviour and earthquakes with many variations, though the findings were akin to their previous study. This research, which took demographic characteristics such as gender, age, and education into account, has also highlighted the importance of location. In terms of gender differences, women were more likely than men to freeze in place during an earthquake (33.4% versus 24.8%) or to go to a child. Additionally, respondents in public places demonstrated a higher tendency to remain stationary (Bourque et al., 1993).

A relevant study by Prati et al. (2012) has also pointed out the aforementioned demographic factors affecting human behavior during earthquakes, serving social sciences researchers to foster a multi-sided solution to earthquake hazards. However, what distinguishes their study on the Fabriano earthquake in Italy is their treatment, which is to reckon with the emotional and cognitive extents of human behavior. Emotions "fear, helplessness, worry, and terror" identified by people who experienced the Umbria—Marche earthquake were dominant, according to Prati et al. (2012). As to behavioral dimensions, these emotions during the earthquake were associated with seeking information, taking shelter, fleeing, freezing, and inaction due to lack of awareness.

Lindell et al. (2016) have emphasized that previous studies on human behavior and responses to disasters and earthquakes typically focused on three main categories: the physical context, the household context, and the social context. However, they criticized these approaches for overlooking the "risk perception" factor, which is an essential part of the Protective Action Decision Model (Lindell et al., 2016). In a separate review, Lambie et al. (2016) have acknowledged the

significance of existing literature but raised concerns about the timing of data collection. Previous studies often relied on earthquake simulations (Goltz & Mileti, 2011; Rosoff et al., 2011) or interviews and questionnaires with earthquake survivors (Bourque et al., 1993; Goltz et al., 1992; Lindell et al., 2016; Prati et al., 2012) to analyze human behavior. In contrast, Lambie et al. (2016) have proposed a new method to capture the "immediate" emotional and behavioral responses of individuals to earthquakes. They suggested coding and analyzing video footage of human behavior during earthquakes to achieve more objective results.

It is important to note again that there is currently no universal behavioral pattern or recommendation for how to act during an earthquake, as studies indicate that each strategy's effectiveness should be assessed on an individual basis by each country or state, taking into account the specific characteristics of the local built environment (Shapira et al., 2018). However, the models or theories on which the behaviors of individuals during an earthquake are based can be summarized as follows:

Protective Motivation Theory (PMT)

Assess threat perception and disaster preparedness by considering threat severity (Faryabi et al., 2023; Rogers, 1975).

Personal Event Theory

Suggests that individuals' self-efficacy and threat assessments influence their choice of coping strategies, with those possessing high self-efficacy tending to engage in more active, problem-focused responses (Duval & Mulilis, 1989; Mulilis & Duval, 1995).

Protective Action Decision Model

Explains how individuals make decisions regarding pre-disaster preparation, responses during disasters, and evacuation processes, focusing on threat perception, the effectiveness of protective measures, and social dynamics (Lindell & Perry, 2012; Shapira et al., 2015).

Social attachment model

Proposes that during disasters, individuals primarily seek support from family and social connections, which helps alleviate anxiety. (Mawson, 2005; Solberg et al., 2008).

Panic theory

Argues that rational thought can be overtaken by fear, leading to chaos and maladaptive behaviors in crises; however, this theory has been largely challenged by recent research (Quarantelli, 2002; Ripley, 2008; Solberg et al., 2008).

Emergent Norm Theory (ENT)

Suggests that earthquakes disrupt existing social norms and hierarchies, prompting the development of new norms shaped by intra-group dynamics and leadership (Solberg et al. 2008).

Social Identity Theory (SIT)

Highlights that individuals facing shared threats tend to cooperate and engage in altruistic behaviors based on their social identities (Solberg et al. 2008).

Social Cognitive Theory

Analyzes individual behavior through personal cognitive factors, socio-environmental influences, and behavioral elements, emphasizing the importance of self-efficacy and social support in preparedness efforts (Adams et al., 2019; Ning et al., 2021; Wang et al., 2021).

Transtheoretical Model (TTM)

Investigates stages of behavioral change but has not been sufficiently explored within the context of earthquakes (Prochaska & DiClemente, 1983)

The "Determining Human Behaviours During Earthquakes and Proposing Policy Recommendations" project numbered 121K930, funded by TÜBİTAK (The Scientific and Technological Research Council of Türkiye) 1001, seeks to analyze the relationship between earthquakes and human behaviors in Turkey and to propose new policies. Given Turkey's location in an earthquake-prone region, significant earthquakes have occurred, including a 7.4 magnitude earthquake in Istanbul in 1999, a 6.8 magnitude earthquake in Elazığ in 2020, and the recent earthquake in Kahramanmaraş in 2023, which affected 11 provinces with magnitudes of 7.7 and 7.6. Additionally, experts warn of an expected devastating earthquake in Istanbul, highlighting the need to understand human behavior to mitigate potential risks and develop solutions. The aim of this research is to explore the behavior of individuals during an earthquake in the Elazığ and İzmir provinces, whether they are at home, in a building, or outdoors. To address this objective, the key research problem is framed as: "How do individuals react when caught in an earthquake inside a home, within a building, or outside?" The research will focus on answering the following question: 1. What are the emotional (excitement), physiological, and behavioral (such as items taken with them and movement patterns) responses of people who experience an earthquake inside a home, within a building, and outdoors at various stages of the earthquake (the initial tremor, the moments of increasing and decreasing intensity, and when it subsides)? It is strongly believed that the answers of this questions will contribute to the existing literature and help ensure human life is adequately protected. Furthermore, it is anticipated that this research will contribute to future disaster management, educational programs, and building designs.

Methodological framework

This research was conducted using a nested multiple case design, a qualitative research method. Case studies investigate a current phenomenon within its real-life context (Yin, 2009). In a nested single case design, a case is divided into multiple sub-units (Yıldırım & Şimşek, 2018). On January 24, 2020, at 20:55 local time, a severe earthquake with a magnitude of 6.5 Mw (according to the Kandilli Observatory) to 6.8 Mw (according to the United States Geological Survey) struck near Elazığ. Later, on October 30, 2020, at 14:51 local time, another significant earthquake with a magnitude of 6.9 Mw (Kandilli

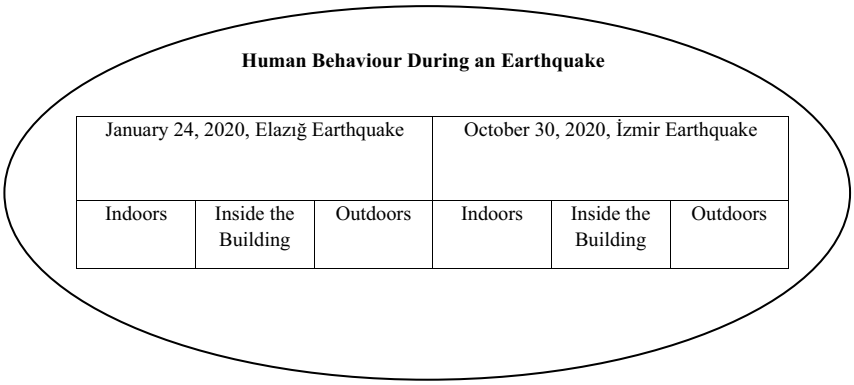

Figure 1. Multiple case nested design of the study.

Observatory) to 7.0 Mw (United States Geological Survey) occurred in the Aegean Sea, affecting İzmir. In this study, the Elazığ and İzmir earthquakes were treated as two distinct cases. The primary focus was to explore human behavior during the earthquakes, both indoors and outdoors. The nested multiple case design of the study is illustrated in Figure 1.

In the study highlighted in Figure 1, we delve into the intricacies of human behavior during earthquakes, focusing specifically on the Elazığ and İzmir events. Each earthquake presented a unique context, allowing us to explore human reactions in various environments, including indoors, inside the building, and the outdoors, treated as separate units of analysis.

Sample selection

Our research aims to shed light on how individuals respond in the chaotic moments of an earthquake, employing the "maximum diversity sampling" method—a purposeful approach designed to unveil common patterns across different scenarios (Yıldırım & Şimşek, 2018). This method has helped us capture a rich tapestry of experiences, accounting for factors such as the specific earthquake contexts (indoor, inside building, outdoor) and diverse participant characteristics, including gender, age, and whether they were alone or accompanied. While İzmir and Elazığ were purposefully selected to represent distinct sociocultural and geographical contexts in Turkey, it is acknowledged that their differences in sociodemographic structure—such as education levels, household composition, and urbanization—may influence human behavior during earthquakes. These contextual distinctions are not interpreted as confounding variables but as integral parts of the comparative case design. Rather than aiming for statistical representativeness, the study adopts a maximum diversity sampling approach to capture behavioral variations across contrasting social settings. Moreover, the analysis focuses on momentary behavioral patterns observable in real earthquake footage; thus, individual-level variables such as family structure, age, or living arrangements were considered descriptively but not as causal determinants. The provinces of İzmir and Elazığ represent Türkiye's diverse socio-cultural and demographic profiles. According to data from the Turkish Statistical Institute (TÜİK, 2023), İzmir is a western metropolis characterized by a 93% urbanization rate, a high level of education,

and a nuclear family structure. The average household size is 2.9, and the proportion of individuals living alone is around 16%. In contrast, Elazığ province, located in the Eastern Anatolia Region, boasts a 63% urbanization rate, a larger family structure (average household size is 4.2), and community-based social relationships. The female labor force participation rate is 36% in İzmir and 22% in Elazığ. These differences reveal the social context that can influence individual responses during an earthquake. Therefore, the aim of this study is to understand the cultural dimensions of "situational awareness" by observing common and different behavioral patterns across these two contrasting socio-demographic structures. In total, we meticulously analyzed 20 video clips from the Elazığ earthquake—comprised of 6 indoors, 10 enclosed, and 4 outdoors—while for the İzmir earthquake, we studied 37 videos (10 indoors, 22 enclosed, 5 outdoors) as detailed in Appendix 1.

The at-home video assessments from Elazığ included the experiences of 14 women and 22 men, representing a range of ages: 11 children, 10 young adults, 12 middle-aged individuals, and 3 seniors. Notably, the living arrangements during the quake varied; 8 individuals were alone, while 15 were with family, 3 with spouses, 4 with children, and others with non-family members. Interestingly, two individuals, determined to be employees based on their behavior and masks, were seen amid the chaos. One child caught on video was at a friend's house when the quake struck.

Turning our attention to the indoor footage (Elazığ: 10; İzmir: 22), we observed the reactions of 25 women and 35 men, predominantly middle-aged (41 individuals), with 17 young people and 2 elderly participants. The imagery depicted a higher proportion of young people in Elazığ compared to a more middle-aged demographic in İzmir's footage. Additionally, an impressive 55 individuals were seen with people outside their families, with only 4 alone and 1 with a spouse.

Lastly, in our examination of outdoor video footage from both earthquakes (Elazığ: 4; İzmir: 5), we analyzed the behaviors of 4 women and 20 men. Within this group, 7 were middle-aged, 13 were young, and 3 fell into the older category. The social dynamics revealed that 10 individuals were with non-family companions, 7 were alone, and 1 was with a spouse, while others were observed with family members or friends. Through this investigation, we uncover a rich narrative of human resilience and varied responses during times of crisis, providing critical insights into how we cope when disaster strikes.

Data collection and analysis

The research collected the power of document review, specifically through the lens of earthquake video footage. Visual materials like films, videos, and photographs serve as invaluable tools for qualitative research, allowing us to delve deep into human behavior. One of the most compelling features of these visuals is their ability to reveal genuine human emotions, gestures, and facial expressions in their natural states (Yıldırım & Şimşek, 2018). This study focuses on image analysis to uncover the instinctive reactions and behaviors exhibited by individuals during two significant earthquake events: the İzmir and Elazığ earthquakes. To gather this footage, we scanned social media platforms, such as YouTube and TikTok, using search terms like "İzmir Earthquake Footage" and "Elazığ Earthquake Footage." Additionally, we collaborated with the archives of the İzmir and Elazığ AFAD (Disaster and Emergency Management Presidency) Directorates, along with local metropolitan municipalities, resulting in

a comprehensive collection of 322 videos. The analysis of these videos was expertly conducted by Lambie et al., employing a methodology that focuses specifically on the nuances of human behavior during earthquake shaking, as detailed in their 2016 publication. The first step in this robust approach involves developing a coding scheme, and the methodological framework guiding this scheme is visually represented in Figure 2.

Through this meticulous analysis, we aim to shed light on the instinctual behaviors that emerge in the face of such natural disasters. Videos were excluded if they (1) duplicated content found elsewhere, (2) lacked sufficient image clarity for behavioural coding, (3) represented news or post-event commentary rather than real-time earthquake footage, or (4) could not be verified for location and timing. After this screening, 62 authentic videos remained suitable for analysis. Each was categorized by spatial context (home, enclosed space, outdoor) and coded using a standardized observation form. Three independent researcher teams reviewed the recordings to ensure coding reliability, reaching full consensus before descriptive analyses were conducted.In the pursuit of understanding human behavior during earthquakes, we embarked on a comprehensive literature review and an exciting classification of 62 images. This journey began with the creation of a detailed code table that outlines basic behavioral patterns, drawing from a variety of influential theories such as Protective Motivation Theory, Personal Event Theory, and Social Cognitive Theory, among others (see Appendix 2). To make sense of the chaos captured in the videos, we developed an observation form (found in Appendix 3) to meticulously document the reactions depicted. The observation form is structured to gather essential details, starting with the platform where the image was published, the video link, and a general description of the scene. It delves into the specifics of each behavioral pattern, examining factors like age, gender, and whether individuals were alone during the earthquake. We scrutinized their immediate reactions, documenting whether they sought safety by moving toward a door or a window, remained still, or took protective measures. For less common reactions, we provided an *other* option to capture unique responses.

We didn't stop at just movements; we also captured the emotional landscape. How did individuals feel during the quake? What did they grab in their moments of panic, and how did they navigate their surroundings? Each of these emotional and behavioral reactions was carefully classified. Interestingly, our findings revealed that images from Izmir province had a more significant representation in our analysis, primarily due to the larger number of people

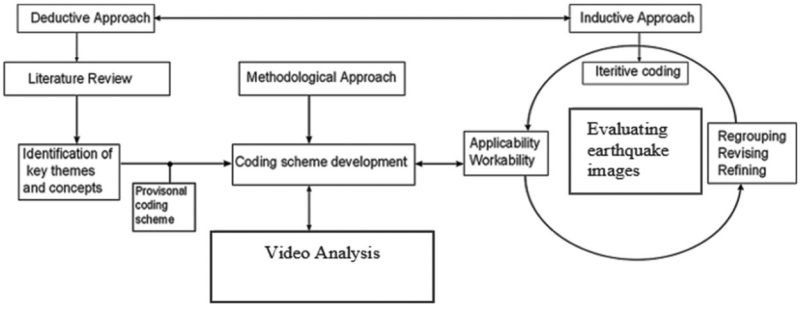

Figure 2. The process of image analysis.

featured. However, to ensure a comprehensive understanding of our research questions, we also examined all findings from provinces like Elazığ, providing province-based evaluations in our tables. Using descriptive statistical analyses, including frequency and cross-table analyses, we reported our findings from both indoor and outdoor scenes in these regions, shedding light on the diverse human responses to one of nature's most unpredictable events.

Limitations in research

This study relies on direct observation of real-time earthquake behavior. Therefore, information about individuals' previous earthquake experiences was not available. Therefore, behavioral differences between individuals who experienced earthquakes before and those experiencing them for the first time were not analyzed as a separate variable. However, previous studies emphasize that personal experience and disaster awareness can shape responses (Gökçe & Tetik, 2012; Nakajima, 2012). Therefore, when interpreting the findings, it was acknowledged that previous experience may have influenced behavior, and this was noted as an inherent limitation of the current study. Future research using interview-based or longitudinal designs is encouraged to examine experiential differences more systematically.

Reliability in research

In document reviews, it is essential to verify the originality of the accessed documents. This research utilized earthquake video footage sourced from social media platforms. The reliability of shared content presents a significant challenge for these platforms. Special emphasis was placed on confirming the authenticity of the images and whether they were captured at the appropriate location and time. The final list for analysis was compiled by considering factors such as the locations depicted in the images, the descriptions of the videos, associated comments, the individuals or institutions sharing the content, whether the footage appeared on news sites, and its presence across multiple platforms.

The human behaviors captured in the video images presented in APPENDIX 1 were initially documented individually by each researcher using the behavior codes provided in APPENDIX 2. Subsequently, the researchers convened to reevaluate the data collectively, focusing on specific indoor and outdoor images related to the Elazığ and İzmir earthquakes, and ultimately reached a consensus on the observations recorded in the forms.

Findings

The findings of the research encompass an analysis of individuals' behaviors during the earthquake, as well as their emotional and behavioral responses captured in indoors setting during the Elazığ and İzmir earthquakes.

Frequency and crosstabulation analyses of indoor images from the Elazığ and İzmir earthquakes

Presented below are the analyses of indoor images taken during the tremors of the Elazığ and İzmir earthquakes, highlighting various contexts such as the moment of sensing the

earthquake, the intensity fluctuations, and the emotional and behavioral reactions exhibited by the earthquake victims.

As we delve into the gripping findings presented in Table 1, a stark contrast emerges between the reactions of individuals in Izmir and Elazığ during the earthquake. In the heart of Izmir, a notable 13 individuals chose to remain still, seemingly keeping unmoved by the tremors around them. Meanwhile, in Elazığ, the responses varied more dramatically: 3 people instinctively moved toward the door, 4 opted to remain still, and 2 directed their attention toward another person nearby. The "other" in the Table marks reactions of people which weren't captured as they grappled with the chaos of the moment. As the tremor intensified, the atmosphere shifted. In Elazığ, 7 individuals decided to remain still, while 2 ventured to orient themselves toward the door. In contrast, Izmir saw 10 people freeze in place, 6 turning their gaze toward the exit, 1 toward a companion, and 2 taking proactive protective measures. Notably, among those in Elazığ, 3 people also adopted protective positions against the mounting intensity. One of these was a mother who attempted to

Table 1. Distribution of behaviours of people indoors during the earthquake by province.

The Moment of Feeling the Earthquake

		Moving towards the door	Remaining still	Taking protective measures	Turning to someone	Other	Total
Province	Elazığ	3	4	1	2	4	14
		21,4%	28,6%	7,1%	14,3%	28,6%	100,0%
	İzmir	1	13	0	4	4	22
		4,5%	59,1%	0,0%	18,2%	18,2%	100,0%
Total		4	17	1	6	8	36
		11,1%	47,2%	2,8%	16,7%	22,2%	100,0%

Increase in the Intensity of the Tremor and the Behavioural Pattern

		Moving towards the door	Remaining still	Taking protective measures	Turning to someone	Other	Total
Province	Elazığ	2	7	3	0	2	14
		14,3%	50,0%	21,4%	0,0%	14,3%	100,0%
	İzmir	6	10	2	1	3	22
		27,3%	45,5%	9,1%	4,5%	13,6%	100,0%
Total		8	17	5	1	5	36
		22,2%	47,2%	13,9%	2,8%	13,9%	100,0%

Decrease in the Intensity of the Tremor and the Behavioural Pattern

		Moving towards the door	Remaining still	Turning to someone	Other	Total
Province	Elazığ	0	1	0	13	14
		0,0%	7,1%	0,0%	92,9%	100,0%
	İzmir	3	9	1	9	22
		13,6%	40,9%	4,5%	40,9%	100,0%
Total		3	10	1	22	36
		8,3%	27,8%	2,8%	61,1%	100,0%

Termination of the Tremor and Behavioural Pattern

		Moving towards the door	Moving towards the window/balcony	Remaining still	Other	Total
Province	Elazığ	0	0	0	14	14
		0,0%	0,0%	0,0%	100,0%	100,0%
	İzmir	5	1	2	14	22
		22,7%	4,5%	9,1%	63,6%	100,0%
Total		5	1	2	28	36
		13,9%	2,8%	5,6%	77,8%	100,0%

shelter her children behind the couch. However, the overwhelming force of the quake and her children's panic made it difficult for her to maintain this protective stance. In a dramatic moment captured on camera, another woman in Elazığ darted under a table, her fear palpable as she urged her husband—who was busy recording the scene—to join her for safety. Her frantic prayers during this ordeal were a testament to the sheer terror she felt. As the tremors began to subside, the scene in Elazığ appeared more settled, with only 1 individual remaining motionless. Meanwhile, the actions of the 13 individuals in the "other" category remained indeterminate. In Izmir, however, 9 people maintained their stillness, with 3 eventually redirecting their attention to the door. The behaviors of the remaining individuals in the "other" category, unfortunately, were lost amidst the chaos. Once the shaking ceased, footage from the Izmir house revealed a flurry of activity: 5 people quickly moved toward the door, 1 gazed out the window or balcony, while 2 remained in their initial positions. The fixed-camera recordings, particularly from within the house, similarly struggled to capture the nuanced behaviors during the calmer moments post-tremor, resulting in a high number of unidentified reactions. The emotional weight of these experiences underscores the incredible variance in human responses to a natural disaster.

The findings presented in Table 2 illustrate a comparison of excitement levels during the earthquake with respect to the participants' province of residence. It appears that panic behavior was significantly more pronounced in both İzmir and Elazığ. Specifically, in Elazığ, 7 out of 14 individuals caught in the earthquake fled the area without taking any belongings. Only one person was observed carrying their bag in the footage. The remaining option represents unobserved data. In İzmir, 14

Table 2. Distribution of emotional and behavioural reactions of people in the house/indoors during the earthquake by province.

		State of Excitement				
		Panic	Calm	Controlled	Puzzled	Total
Province	Elazığ	12	1	1	0	14
		85,7%	7,1%	7,1%	0,0%	100,0%
	İzmir	17	2	2	1	22
		77,3%	9,1%	9,1%	4,5%	100,0%
Total		29	3	3	1	36
		80,6%	8,3%	8,3%	2,8%	100,0%
		Items Taken Along				
		Anything	Cellphone	Bag	Other	Total
Province	Elazığ	7	0	1	6	14
		50,0%	0,0%	7,1%	42,9%	100,0%
	İzmir	14	5	0	3	22
		63,6%	22,7%	0,0%	13,6%	100,0%
Total		21	5	1	9	36
		58,3%	13,9%	2,8%	25,0%	100,0%
		Movement Pattern				
		Freezing	Walking	Running	Other	Total
Province	Elazığ	8	1	0	5	14
		57,1%	7,1%	0,0%	35,7%	100,0%
	İzmir	13	3	5	1	22
		59,1%	13,6%	22,7%	4,5%	100,0%
Total		21	4	5	6	36
		58,3%	11,1%	13,9%	16,7%	100,0%

out of 22 people also left without taking anything, while 5 managed to grab their phones. When examining their behaviors during the earthquake, it was noted that 8 out of 14 individuals in Elazığ exhibited freezing behavior. One person chose to walk, and the movements of 5 others could not be discerned due to camera angles. Conversely, in İzmir, 13 out of 22 individuals froze during the earthquake, 5 ran, and 3 walked. Notably, the behavior of running, which could potentially endanger others, was not observed in the indoor footage. The presence of emotionally connected individuals at home likely contributed to more controlled responses in these situations. Additionally, it is understandable that such a need for spatial awareness may not have been felt at home. Moreover, as indicated in the tables, the high instances of freezing behavior are primarily attributed to the restriction of movement caused by the intensity of the tremors.

Frequency and cross table analyses of indoor images of Elazığ and İzmir earthquakes

Below, analyses of the indoor images recorded during the earthquakes in Elazığ and İzmir in various contexts (the moment of feeling the earthquake, the moment when the earthquake intensity increased, decreased and ended, the emotional and behavioral reactions of the earthquake victims) are presented.

As indicated in Table 3, it can be seen that earthquake victims who were inside buildings at the onset of the tremor primarily chose to take protective measures initially. Subsequently, they directed their attention toward the door, followed by remaining still, and finally turning to others around them. A provincial assessment reveals that out of 48 individuals in Izmir, 18 opted for protective measures, while in Elazığ, only 1 out of 12 did so. Furthermore, 15 individuals in Izmir moved toward the door, and 10 remained still. In contrast, in Elazığ, 1 out of 12 moved toward the door, with 5 not moving. Notably, no individuals in Elazığ turned toward others, whereas 4 individuals in Izmir did. As the intensity of the tremor increased, 5 out of 12 people in Elazığ and 18 out of 48 in Izmir directed their attention to the door. The data indicates that 18 individuals in Izmir took protective measures as the earthquake intensified. This suggests a greater preference for protective actions over inaction in Izmir compared to Elazığ. When the tremor's intensity decreased, it was noted that 6 out of 12 people in Elazığ exhibited behavior outside typical categories, with 2 turning toward the door, 2 remaining still, and 1 looking toward another person. In contrast, 22 out of 48 people in Izmir turned toward the door, 6 toward another person, 13 took protective measures, and 4 did not move at all. Additionally, it was observed that 29 out of 48 in Izmir directed their attention to the door, while all 9 individuals in Elazığ exhibited behaviors outside expected categories.

Based on the findings presented in Table 4, it can be observed that among the individuals caught in the earthquake within the building, 30 exhibited signs of panic, 18 remained calm, and 12 maintained a sense of control. The video analysis conducted in both provinces further confirmed that the individuals displayed panic behavior during the incident. It was found that 28 out of the 60 people affected by the earthquake chose not to take any belongings with them. Those who did grab items tended to prioritize their other belongings before retrieving their phones and wallets. In Elazığ province, it

Table 3. Distribution of behaviours of people inside buildings during the earthquake by province.

The Moment of Feeling the Earthquake							
		Moving towards the door	Remaining still	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	1	5	1	0	5	12
		8,3%	41,7%	8,3%	0,0%	41,7%	100,0%
	İzmir	15	10	18	4	1	48
		31,3%	20,8%	37,5%	8,3%	2,1%	100,0%
Total		16	15	19	4	6	60
		26,7%	25,0%	31,7%	6,7%	10,0%	100,0%

Increase in the Intensity of the Tremor and the Behavioural Pattern						
		Moving towards the door	Remaining still	Taking protective measures	Other	Toplam
Province	Elazığ	5	4	1	2	12
		41,7%	33,3%	8,3%	16,7%	100,0%
	İzmir	18	11	18	1	48
		37,5%	22,9%	37,5%	2,1%	100,0%
Total		23	15	19	3	60
		38,3%	25,0%	31,7%	5,0%	100,0%

Decrease in the Intensity of the Tremor and the Behavioural Pattern							
		Moving towards the door	Remaining still	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	2	2	1	1	6	12
		16,7%	16,7%	8,3%	8,3%	50,0%	100,0%
	İzmir	22	4	13	6	3	48
		45,8%	8,3%	27,1%	12,5%	6,3%	100,0%
Total		24	6	14	7	9	60
		40,0%	10,0%	23,3%	11,7%	15,0%	100,0%

Termination of the Tremor and Behavioural Pattern							
		Moving towards the door	Remaining still	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	1	1	1	0	9	12
		8,3%	8,3%	8,3%	0,0%	75,0%	100,0%
	İzmir	29	6	9	1	3	48
		60,4%	12,5%	18,8%	2,1%	6,3%	100,0%
Total		30	7	10	1	12	60
		50,0%	11,7%	16,7%	1,7%	20,0%	100,0%

was noted that individuals primarily took belongings categorized as "other," whereas in İzmir province, a larger number of people did not take anything at all, with the majority opting to take their phones. When examining earthquake response behaviors according to movement patterns, it was revealed that out of 48 individuals caught in the earthquake in İzmir province, 19 walked, 17 ran, 11 froze, and 1 ran in a manner that endangered others. In contrast, in Elazığ, of the 12 individuals observed, 5 were frozen in place, 5 were running, and 2 were walking.

Frequency and crosstabulation analyses of outdoor images of Elazığ and İzmir earthquakes

Below are the analyses of outdoor images recorded during the earthquakes in Elazığ and İzmir in various contexts (the moment of feeling the earthquake, the moment when the earthquake intensity increased, decreased and ended, the emotional and behavioral reactions of the earthquake victims).

Table 4. Distribution of emotional and behavioural reactions of people inside the building during the earthquake by province.

		State of excitement			
		Panic	Calm	Controlled	Total
Province	Elazığ	5	3	4	12
		41,7%	25,0%	33,3%	100,0%
	İzmir	25	15	8	48
		52,1%	31,3%	16,7%	100,0%
Total		30	18	12	60
		50,0%	30,0%	20,0%	100,0%

		Items Taken Along				
		Anything	Cellphone	Bag	Other	Total
Province	Elazığ	0	0	0	12	12
		0,0%	0,0%	0,0%	100,0%	100,0%
	İzmir	28	13	1	6	48
		58,3%	27,1%	2,1%	12,5%	100,0%
Total		28	13	1	18	60
		46,7%	21,7%	1,7%	30,0%	100,0%

		Movement Pattern				
		Freezing	Walking	Running	Other	Total
Province	Elazığ	5	2	5	0	12
		41,7%	16,7%	41,7%	0,0%	100,0%
	İzmir	11	19	17	1	48
		22,9%	39,6%	35,4%	2,1%	100,0%
Total		16	21	22	1	60
		26,7%	35,0%	36,7%	1,7%	100,0%

The analysis presented in Table 5 reveals significant insights into the behaviors exhibited by earthquake victims during seismic events, particularly focusing on those who were outdoors at the time of the tremor. The data suggests that victims predominantly engaged in "other" behaviuors—primarily consisting of actions such as guiding or leading others—before subsequently adopting protective measures. In the case of İzmir province, a total of 4 individuals took protective measures, while 3 each turned toward doors and toward other people, with an additional 3 demonstrating various "other" behaviors. Conversely, in Elazığ, the results indicate that 9 victims exhibited "other" behaviors, whereas only 1 individual took protective measures when they experienced the earthquake. Overall, 16 victims in outdoor settings displayed a preference for "other" behaviors, notably escalating with the tremor's intensity, while 5 adopted protective measures. Interestingly, 3 individuals opted to remain stationary, contrasted by 5 individuals who actively engaged in protective actions. The trend in both cities reveals a higher frequency of "other" behaviors—10 in İzmir compared to 6 in Elazığ. In terms of protective measures, İzmir had 3 individuals exhibiting such behaviors, while only 2 did so in Elazığ. As the earthquake's intensity waned, in Elazığ, 3 out of 8 took protective measures, with 1 remaining inactive and turning toward others. In İzmir, 2 out of 10 individuals chose to remain still and take protective actions, while 1 redirected their attention toward others, and 5 engaged in "other" behaviors, such as attempts to guide or assist fellow victims. Following the cessation of seismic activity, behavioral responses remained varied. In Elazığ, 1 person turned toward others, 3 individuals remained inactive, and 1 took protective measures. In contrast, 9 individuals in both cities demonstrated behaviors categorized as "other." The "other behaviours" category in the study includes behaviors that are observed less frequently, such as acting aimlessly in

Table 5. Distribution of behaviours exhibited by people outdoors during the earthquake by province.

The Moment of Feeling the Earthquake						
		Moving towards the door	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	0	1	0	9	10
		0,0%	4,3%	0,0%	39,1%	100,0%
	İzmir	3	4	3	3	13
		13,1%	17,4%	13,1%	13,1%	100,0%
Total		3	5	3	12	23
		13,1%	21,7%	13,1%	52,2%	100,0%

Increase in the Intensity of the Tremor and the Behavioural Pattern					
		Remaining still	Taking protective measures	Other	Total
Province	Elazığ	2	2	6	10
		8,3%	8,3%	25,0%	100,0%
	İzmir	1	3	10	14
		4,2%	12,5%	41,7%	100,0%
Total		3	5	16	24
		12,5%	20,8%	66,7%	100,0%

Decrease in the Intensity of the Tremor and the Behavioural Pattern						
		Remaining still	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	1	3	1	3	8
		5,6%	16,7%	5,5%	16,7%	100,0%
	İzmir	2	2	1	5	10
		11,1%	11,1%	5,5%	27,8%	100,0%
Total		3	5	2	8	18
		16,7%	27,8%	11,1%	44,4%	100,0%

Termination of the Tremor and Behavioural Pattern						
		Remaining still	Taking protective measures	Turning to somebody	Other	Total
Province	Elazığ	0	0	1	6	7
		0,0%	0,0%	7,1%	42,8%	100,0%
	İzmir	3	1	0	3	7
		21,4%	7,1%	0,0%	21,4%	100,0%
Total		3	1	1	9	14
		21,4%	7,1%	7,1%	64,2%	100,0%

a state of panic, attempting to direct others, praying, making efforts to help, and gathering personal belongings, in addition to leadership or guidance actions. These behaviors have been grouped under the heading "other" because they occur relatively infrequently and do not form dominant behavioral patterns in the data set. These findings underscore the dynamic responses of individuals during natural disasters and highlight the varying degrees of engaged and passive behaviors based on situational context and environmental cues.

The distribution of individuals caught outdoors during an earthquake, categorized by their levels of excitement, is detailed in Table 6. From this table, it can be observed that among those subjected to behavioral analysis, 10 individuals exhibited panic, while 7 remained calm and 6 acted in a controlled manner. These findings indicate that individuals in both provinces displayed panic behavior when outdoors during the earthquake. An examination of the items taken by these individuals reveals that 10 people chose not to take anything with them. Among those who did, the first items collected were "other" belongings such as wallets, jackets, bags, cigarettes, lighters, and keys, followed by phones. In Elazığ province, it was determined that no individuals took anything with them, whereas in İzmir province, a greater number did not take anything, with an equal number of people taking

Table 6. Distribution of emotional and behavioural reactions of people outdoors during the earthquake by province.

State of Excitement					
		Panic	Calm	Controlled	Total
Province	Elazığ	6	3	1	10
		26,1%	13,1%	4,3%	100,0%
	İzmir	4	4	5	13
		17,4%	17,4%	21,7%	100,0%
Total		10	7	6	23
		43,5%	30,5%	26,0%	100,0%

Items taken Along						
		Anything	Cell phone	Bag	Other	Total
Province	Elazığ	5	2	0	3	10
		23,8%	9,5%	0,0%	14,3%	100,0%
	İzmir	5	2	2	2	11
		23,8%	9,5%	9,5%	9,5%	100,0%
Total		10	4	2	5	21
		47,6%	19,0%	9,5%	23,8%	100,0%

Movement Pattern						
		Freezing	Walking	Running	Trampling others while running	Total
Province	Elazığ	2	4	4	0	10
		9,1%	18,2%	18,2%	0,0%	100,0%
	İzmir	1	4	5	2	12
		4,5%	18,2%	22,7%	9,1%	100,0%
Total		3	8	9	2	22
		13,6%	36,4%	40,9%	9,1%	100,0%

phones, bags, and other belongings. According to the data in Table 6, in İzmir province, out of 12 individuals, 4 were walking, 5 were running, 1 was frozen in place, and 2 were running in a way that appeared to push others aside. In contrast, in Elazığ province, out of 10 people, 4 were walking, 4 were running, and 2 were freezing. Notably, the movement patterns of walking and running were more prevalent in both Elazığ and İzmir provinces.

Discussion

The main objective of this study is to understand how individuals behave indoors, in buildings, and outdoors during an earthquake. The research question guiding this study is "How do people behave during an earthquake when they are at home, in a building, or outdoors?" Traditional methods have been inadequate in addressing this question, so we have utilized video recordings to observe the behaviors of individuals experiencing an earthquake indoors, inside a building, and outdoors in the Elazığ and İzmir provinces. Our analysis has mainly focused on their behaviors at the moment they felt the earthquake, as well as when the intensity of the earthquake increased, decreased, and eventually ended. In addition to this, we have aimed to assess how individuals express their emotions (excitement) and demonstrate their reactions (such as the items they take with them and their movements) during an earthquake.

As shown blatantly in the literature, the importance of the behavior and emotions of people during an earthquake was well understood (Ardagh et al., 2015; Peek-Asa et al., 1998;

Spence & So, 2009). However, what is at stake and crucial is to understand that relying on just one variable isn't enough to fully grasp how to take precautions in the event of an earthquake. For example, a study of indoor images captured during the Elazığ and İzmir earthquakes revealed that the behaviors and emotional responses of earthquake victims differed between the two locations and cultural environments. In Elazığ, people were more likely to remain still or take protective measures, whereas in İzmir, heading toward the door was a more common reaction. Cultural factors were found to have a significant influence on these behaviors, as observed in Goltz and others' research (Goltz & Bourque, 2017; Goltz et al., 2020). On the other hand, the distribution of emotional and behavioral responses indoors during the earthquakes, as shown in Table 2, highlighted the predominance of panic and freezing responses in both cities, with variations in the actions taken and modes of movement. These behavioral patterns exhibited during the Elazığ and İzmir earthquakes might be seen universal ones, as we learn from the seminal research of Lindell and others examining earthquakes in New Zealand and Japan that the shock of the first moments of an earthquake causes freezing (Lindell et al., 2016). Nevertheless, observing people's behavior during an earthquake retains its significance as that would either help understand people's actions during earthquakes or develop effective strategies to mitigate the associated risks. Several studies have reported that movement during an earthquake increases the risk of injury, underscoring the importance of closely observing and analyzing people's behaviors and emotional states from videos captured during and after earthquakes (Johnston et al., 2014; Shoaf et al., 1998). This is essential as preplanned precautions may not always be effective in practice.

The data in Table 3 illustrates the various behaviors displayed by people inside buildings during an earthquake in different provinces. Despite human physiology would respond with "freeze," "flee," or "stay/fight" reactions in the face of a threat (Marcus et al., 2006), or running out of the building is supposed the universal behavior (Arnold, 1990), the findings of Table 3 show vice versa. In Elazığ, people tended to remain still and exhibit other reactions, while in İzmir, people more frequently moved toward the door and took precautionary measures. On one hand, it is here realized that the diversity in these behaviors is shaped by the intensity of the earthquake, emotional motivation, the region where the earthquake occurred, and cultural norms (Goltz et al., 2020). On the other hand, it became clear that the official "drop, cover, and hold on" recommendations during an earthquake are at variance with the real-life reactions, behaviors, and emotional responses, which diverge from planned theoretical actions during such events. For instance, in their seminal study, Prati et al. (2012) have shown in their work that other reactions to earthquakes are more prevalent instead of the "drop, cover, and hold on" position in Umbria—Marche, Italy. In Turkey as well that very few people followed the "drop-cover-hold on" behavior outlined in earthquake training during the earthquake. This rareness in the implications of the official recommendations demonstrates that a new policy is required to educate people on how to decrease the catastrophic effects of an earthquake.

The analysis of Table 4 indicates that there were significant differences in the behaviors and emotions of individuals in Elazığ and İzmir both during and after the earthquake, consistent with findings from other tables. There is a clear link between behavior and emotional response, and a wide range of emotional expressions were observed. In line with Goltz and Bourque (2017) study, which has compared three different earthquakes in the United States and found that the dominant behavior was remaining still during the earthquake, this analysis

also highlights that in İzmir, people tend to panic more frequently, while those in Elazığ appear to be more composed. When it comes to evacuating the buildings, there were also noticeable differences. In Elazığ, most people exited the buildings without taking anything. In contrast, in İzmir, although the majority also left without taking anything, there was a higher number of individuals carrying their phones. In addition to exiting a building during an earthquake, another noteworthy behavior highlighted in the literature is the act of closing fuel valves (Archea & Kobayashi, 1984; Ohta & Ohashi, 1985). However, no evidence of this behavior was observed in the analyzed images. Generally, individuals tended to leave the building as quickly as possible, often prioritizing their safety over personal belongings, or they wait until the shaking has ceased before making their exit. Another remarkable finding from Table 4 is that in Elazığ, higher rates of freezing and running were observed, while in İzmir, more people preferred walking. The behavior of running in a way that tramples others was rarely observed in İzmir. This analysis highlights the cultural differences between the two cases, offering hints for organizational problem-solving.

The analysis of outdoor images captured during the Elazığ and İzmir earthquakes includes various aspects such as the moments of feeling the earthquake, the intensity of the earthquake (increase, decrease, and end), and the emotional and behavioral reactions of the people, as presented in Table 5. The frequency of taking protective measures is higher in İzmir in response to earthquakes, whereas in Elazığ, other types of behaviors (e.g., unknown reactions) are more common. As the intensity of shaking increases, "other" behaviors become more prevalent in both cities, with a higher percentage in İzmir. However, when the shaking decreases, it is observed that taking protective measures is more common in Elazığ, while other behaviors are more prevalent in İzmir. When the shaking stops, remaining motionless is the more common behavior in İzmir, while in Elazığ, other behaviors are predominant.

The emotional responses of individuals affected by the earthquake outdoors in Table 6 are currently under examination. In Elazığ, panic appears to be the prevailing reaction, whereas in İzmir, people tend to exhibit more controlled behavior. It is worth noting that in both cities, a majority of individuals did not bring any belongings with them; however, the prevalence of carrying a bag is slightly higher in İzmir. Furthermore, in Elazığ, running and walking are the most common behaviors, while in İzmir, these behaviors are also prevalent. Interestingly, there were observations of individuals in İzmir running in a manner that endangered others, a behavior not observed in Elazığ.

In conclusion, the presented analyses demonstrate how people's emotional and behavioral responses to earthquakes differ between cities when they occur indoors and outdoors. Our findings align with those of international research on human behavior during earthquakes; however, it is clear that there are cultural and social differences in some areas. Factors such as culture, gender, age group, location during the earthquake, being alone or with others, ethnicity, shaking intensity, previous earthquake experiences, and the training received all impact behavior during earthquakes (Çakmak et al., 2018; Goltz & Bourque, 2017; Lindell et al., 2016; Neumayer & Plümper, 2007; Ray-Bennett, 2018). Therefore, as highlighted by Goltz et al. (2020), recommendations for responding to disasters and what to do during them should be assessed within the social, cultural, economic, and political contexts of each country. This study is considered to have made a significant contribution to understanding earthquake behavior in our country and is expected to serve as a foundation for future literature on the topic.

Conclusion and recommendations

This paper examines the idea that not every person will exhibit similar behaviors during an earthquake. Behaviors may vary based on individual characteristics and the surrounding environment. The aim is to reconsider training plans and search and rescue operations, which currently assume that all people will exhibit standard behaviors during an earthquake. This approach is believed to reduce casualties during earthquakes and improve the effectiveness of search and rescue operations.

It is widely believed that analyzing videos recorded during an earthquake provides more reliable insights than post-event interviews and questionnaires. This method also offers researchers a systematic way to analyze real human responses during and immediately after earthquakes. The coding scheme developed from these videos, sourced from social media platforms, will be shared with other researchers studying this important topic, potentially increasing the availability of earthquake simulation tools and providing practical training on earthquake response. Instead of a single earthquake preparedness training plan, the suggestion is to create various scenarios and customize the training based on these scenarios (e.g., being at home at night, at the workplace, experiencing falling objects, being outdoors, etc.), which can help reduce panic behavior. These scenarios should cover the moments when the earthquake begins, intensifies, and ends. Additionally, structuring the training as a skill-building exercise rather than a traditional class could be more effective.

Overall, this paper puts forward six-part policy recommendations. First, in order to increase earthquake awareness and increase the level of preparedness education policies should be strengthened, special curricula and practical applications that would reach all segments of society should be structured. Second, indoor security measures, earthquake bag preparation and emergency plans should be disseminated. Third, in zoning plans, construction of earthquake-resistant structures, reinforcement of existing buildings and establishment of emergency response infrastructure at local level are required. Fourth, free psychological support services after earthquake, crisis intervention teams and accessibility of health services should be reinforced. Fifth, technological tools and early warning and communication systems should be kept prepared for post-disaster scenarios. Lastly, special education and psychosocial support programs for disadvantaged groups can be recommended with community-based support and volunteer activities.

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Appendices

APPENDIX 1. List of Evaluated Elazığ and İzmir Earthquake Images

Province	Location	Video Link	Image Name	Duration	Time Interval
Elâzığ	Indoors	https://www.youtube.com/watch?v=m4pTf1p_6tc	6.8'lik Deprem Türkiyeyi Sarstı!	01:04	04:23–04:41
		https://www.youtube.com/watch?v=I-QISYt_GwU	Elazığ Depreminin En Net Görüntüsü	05:48	00:05–01:04
		https://www.youtube.com/watch?v=owiM76Oy2dQ	22 Saniyelik dehşet. 22 Can kaybı	05:48	01:47–01:56
		https://www.youtube.com/watch?v=owiM76Oy2dQ	23 Saniyelik dehşet. 22 Can kaybı	05:48	02:57–03.00
		https://www.youtube.com/watch?v=owiM76Oy2dQ	24 Saniyelik dehşet. 22 Can kaybı	05:03	03:00–03:03
		https://www.tiktok.com/@komediarsivi0/video/6785647956260326661?is_from_webapp = v1	Elâzığ Deprem Görüntüleri	00:48	00:00–00:48
İzmir	Indoors	https://www.youtube.com/watch?v=fwVo0vvG3Wk	Deprem Anı: Video Çekerken Yakalandık	14:49	09:35–14:49
		https://www.youtube.com/watch?v=oIbyk_JzU8U	Canlı Yayında İzmir Depremine Yakalanan Yayıncılar	04:48	00:00–04:48
		https://www.youtube.com/watch?v=qY1JqiE77KU	Depreme Yatakta Yakalandı.!!!	01:23	00:00–00:19
		https://www.youtube.com/watch?v=IS3ahE6vxYY	İzmir deprem anı-deprem sonrası-inanılmaz görüntüler	02:03	00:55–02:03
		https://www.youtube.com/watch?v=-VJSdXUG8-0	Deprem anları . . . -Atv Haber 31 Ekim 2020	05:01	02:07–03:03
		https://www.youtube.com/watch?v=EJ4-cWSexdc	İzmir Deprem Görüntüleri (30.10.2020 Saat: 14:51)	07:56	03:55–04:41
		https://www.youtube.com/watch?v=nNVhX71MSX4	30 Ekim 2020 İzmir Depremi Kendi Yaşadıklarım Bebek Güvenlik Kamerasından	02:16	00:00–02:16
		https://www.youtube.com/watch?v=JmvTpJSFuNE	Uykuda depreme yakalana çocuğu böyle korudu	00:35	00:00–00:35
		https://www.youtube.com/watch?v=-VJSdXUG8-0	Deprem Anları . . . Atv Haber 31 Ekim 2020	05:01	03:04–04:27
		https://www.youtube.com/watch?v=KEbenITizRo	İzmir Depremi Kamera Görüntüleri	15:53	01:43–02:04

(*Continued*)

(Continued).

Province	Location	Video Link	Image Name	Duration	Time Interval
Elâzığ	Inside the Building	https://www.youtube.com/watch?v=xiE9JBvQwBw&t=46s	Elazığ'daki 6,8'lik deprem kamerada: Kelime-i Şehadet getirdi	03:35	00:00–00:31
		https://www.youtube.com/watch?v=XHKpurRLF8g	Elazığ'da yerel bir radyoda deprem anı kameralara yansıdı	01:34	00:00–00:32
		https://www.youtube.com/watch?v=uNtJrjugo6g	6.8'lik depremin yeni görüntüleri!	01:57	01:01–01:10
		https://www.youtube.com/watch?v=NVrPIU_9Jts	Deprem Anında Fırat Üniversitesi Hastanesi'nde Büyük Panik Yaşandı	04:33	00:00–00:32
		https://www.youtube.com/watch?v=BYmipkioi_I	Elazığ'da Deprem Anı Kameraya Yansıdı	02:41	00–00-00:57
		https://www.youtube.com/watch?v=E1i66zfcG60	Doğum esnasında deprem anı. | Son Dakika | Elazığ 6,8 Depremi	00:34	00:08–00:34
		https://www.youtube.com/watch?v=dpUKVa_slbk	Elazığ'da Deprem Anları Saniye Saniye Kameralara Yansıdı	07:41	00:07–00:35
		https://www.youtube.com/watch?v=0KLDXFKySBA	Depremde herkes kaçarken, garson servise devam etti	02:33	00:00–00:05
		https://www.youtube.com/watch?v=88h3Lny-ZPQ	Elazığ'da deprem anı saniye saniye böyle yaşandı	09:54	00:00–00:08
		https://www.youtube.com/watch?v=5pyVz5gH5PQ	6,8'lik Elazığ depreminden yeni görüntü: Ambulanslar beşik gibi sallandı	01:10	00:12–00:15

(*Continued*)

(Continued).

Province	Location	Video Link	Image Name	Duration	Time Interval
İzmir	Inside the Building	https://www.youtube.com/watch?v=D53v8cgpRvc	30. EKİM İzmir Deprem Anı Kameralara Bu Şekilde Yansıdı	07:07	00:14–00:55
		https://www.youtube.com/watch?v=jJZVqsSMYI0	M 7.0 Earthquake hits Turkey (Izmir) Compilation Oct 30, 2020 - Part 2	10:40	00:20–01:01
		https://www.youtube.com/watch?v=DJVGEwmmS_E	İzmir'de Deprem Anı ve Sonrasına Ait Görüntüler – 4	05:56	04:45–05:30
		https://www.youtube.com/watch?v=jJZVqsSMYI0	M 7.0 Earthquake hits Turkey (Izmir) Compilation Oct 30, 2020 - Part 2	10:40	03:30–04:20
		https://www.youtube.com/watch?v=Yoh-n0G_hXo	Deprem anının yeni görüntüleri	01:11	00:27–00:43
		https://www.youtube.com/watch?v=8PMKNy8yHWw	Turkey 7.0 Earthquake (Izmir) Compilation October 30, 2020/ Izmir Deprem 30 Ekim 2020	08:33	06:50–08:33
		https://www.youtube.com/watch?v=Fov480tskps	İZMİR DEPREM ANI SON DAKİKA	04:05	03:23–03:26
		https://www.youtube.com/watch?v=Ce-etINkmIA	İzmir Deprem Anı yeni görüntüler	00:45	00:00–00:45
		https://www.youtube.com/watch?v=EWIA3BXZIKc	İzmir deprem anı 30/10/2020	01:14	00:00–01:14
		https://www.youtube.com/watch?v=EncjG4EpT48	İzmir Deprem anları Kuşadası mağaza	01:12	00:00–00:55
		https://www.youtube.com/watch?v=KQbE1aoz1Yc	BÜYÜK İZMİR DEPREMİ - Ofiste deprem anı (30.10.2020)	04:20	00:00–04:20
		https://www.youtube.com/watch?v=RZ2Ng_pD5vU	İzmir depremi anı – 1	00:45	00:00–00:45
		https://www.youtube.com/watch?v=VhYB_B4stgU	İzmir'de deprem anı kameralara böyle yansıdı	00:42	00:00–00:42
		https://www.youtube.com/watch?v=W5trKvDJ-6g	İzmir Bornova'da dükkanda deprem anı Güvenlik kamerası görüntüleri	03:22	02:43–03:03
		https://www.youtube.com/watch?v=46Dx4wl9BOs	İzmir'de deprem anları kamerada	01:40	00:00–00:50
		https://www.youtube.com/watch?v=8Lqk1hS0zDU	İzmir deprem anı binanın çatlaması	00:11	00:00–00:11
		https://www.youtube.com/watch?v=mSoCVlM-EU8	İzmir Depremi Bina Yıkılma Anı 30.10.2020	00:15	00:00–00:15
		https://www.youtube.com/watch?v=lir8ehrXfD0	İzmir Depremi, Çankaya Konak İzmir Deprem Anı	01:37	00:00–01:37
		https://www.youtube.com/watch?v=M7TYVHEAPHE	Araç kamerasından İzmir deprem anı)	00:45	00:00–00:45
		https://www.youtube.com/watch?v=b6Yd3I24thI	İzmir Deprem Anı Sondakika Panik Anı Kamerada	01:36	00:00–00:45
		https://www.youtube.com/watch?v=lw4msxK8Z8c	Depreme asansörde yakalandı, korku dolu anlar kameraya böyle yansıdı	01:20	00:01–01:19
		https://www.youtube.com/watch?v=r68t5kZ7-VA	Reklam ajansında deprem anı	01:46	00:00–01:46

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Province	Location	Video Link	Image Name	Duration	Time Interval
Elâzığ	Outdoor	https://www.youtube.com/watch?v=OJ5hXQZTONU	Elazığ Sivrice'deki depremde binanın yıkılma anı MOBESE kamerası	01:05	00:51–01:05
		https://www.youtube.com/watch?v=nY1uF0ujbKo	Elazığ Depremi'ne ilişkin yeni görüntüler ortaya çıktı	04:26	01:29–01:44
		https://www.youtube.com/watch?v=nY1uF0ujbKo	Elazığ Depremi'ne ilişkin yeni görüntüler ortaya çıktı	04:26	01:31–01:47
		https://www.youtube.com/watch?v=nY1uF0ujbKo	Elazığ Depremi'ne ilişkin yeni görüntüler ortaya çıktı	04:26	03:38–03:50
İzmir	Outdoor	https://www.youtube.com/watch?v=8PMKNy8yHWw	Turkey 7.0 Earthquake (Izmir) Compilation October 30, 2020/ Izmir Deprem 30 Ekim 2020	08:33	00:50–01:30
		https://www.youtube.com/watch?v=CFl45DJkBRk (	İzmir depremi anı – 2 İzmir	00:34	00:15–00:34
		https://www.youtube.com/watch?v=8PMKNy8yHWw	Turkey 7.0 Earthquake (Izmir) Compilation October 30, 2020/ Izmir Deprem 30 Ekim 2020	08:33	08:16–08:30
		https://www.youtube.com/watch?v=70mli76TFlc	İzmir deprem anı bütün görüntüleri çok şiddetli	01:44	00:41–00:45
		https://www.youtube.com/watch?v=2_rjFeqkdN0	İzmir aydın Kuşadası 6.8 büyüklüğünde deprem anı	00:15	00:00–00:15

APPENDIX 2. List of Codes of Behaviours

Moving toward the door	Moving toward any exit door
Moving toward the window/ balcony	Moving toward any window or balcony
Remaining still	Remaining still in place due to not cognitively decided what to do.
Taking protective measures	Being in a place where he/she or those around his/her will be least harmed
Turning to somebody	Moving toward someone else
Panic	Fear dominating a person's behavior
Calm	The person's behavior shows no excitement or surprise, or they remain calm.
Controlled	The person behaves in a way that is proportionate to the situation experienced.
Freezing	Remaining still due to emotional inhibition when the person has the opportunity to act
Walking	The person moves from where he/she is with normal steps
Running	The person moves forward quickly by increasing their step rate.
Trampling others while running	The potential for harm to other people during a person's running behavior

APPENDIX 3. Observation Form

The Platform Where the Image Was Published (Video Link): Image Content: Indoor with Family () Indoor Alone ()Outdoors ()Enclosed Public Space () The Duration of Image: General Depiction of the Image:

Gender	Woman ()	Man ()				
Age	Child ()	Young ()	Middle Aged ()	Elderly ()		
Those next to him/her	Alone ()	With Family ()	With Spouse ()	With Children ()	With Non-Family Members ()	Other ()
Behavioral Pattern When Felt an Earthquake	Moving Towards the Door ()	Moving Towards the Window/ Balcony ()	Remaining Still ()	Taking Protective Measures ()	Turning to Someone ()	Other ()
Behavioral Pattern as Tremor Intensity/ Duration Increases	Moving Towards the Door ()	Moving Towards the Window/ Balcony ()	Remaining Still ()	Taking Protective Measures ()	Turning to Someone ()	Other ()
Behavioral Pattern When the Intensity of the Tremor Decreases	Moving Towards the Door ()	Moving Towards the Window/ Balcony ()	Remaining Still ()	Taking Protective Measures ()	Turning to Someone ()	Other ()
Behavioral Pattern When the Tremor Ends	Moving Towards the Door ()	Moving Towards the Window/ Balcony ()	Remaining Still ()	Taking Protective Measures ()	Turning to Someone ()	Other ()
The Material He/She Had or Brought with him/ her	Anything ()	Cell phone ()	Car Key ()	Bag ()	Wallet ()	Other ()
State of Excatement	Panic Behaviour ()	Calm ()	Controlled ()			
Movement Pattern	Freezing ()	Walking ()	Running ()	Trampling others while running ()		