

Assessing Earthquake Preparedness in a Culturally Diverse Student Population in Japan

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Conceptual Framework and Source Mapping

This supplementary appendix includes all 40 items used in the survey, categorized by thematic section. Each item is annotated with its source (validated scale, theoretical model, or author development) and accompanied by a brief justification highlighting its theoretical or conceptual relevance.

- Items marked “**Adapted from**” were directly based on existing validated scales, such as the Household Emergency Preparedness Instrument (HEPI), the Psychological Preparedness for Disaster Threat Scale (PPDTS), or the Earthquake Readiness Scale (ERS).
- Items marked “**Informed by**” were developed using concepts from theoretical frameworks, including the Extended Parallel Process Model (EPPM) and the Protective Action Decision Model (PADM). These items reflect specific constructs like perceived severity, susceptibility, response efficacy, or decision-making behavior.
- Items marked “**Author-developed**” were created to capture aspects of earthquake preparedness not addressed by existing scales.

The column titled “**Theoretical Basis / Original Scale Item**” explains which concept, scale item, or framework guided the development of each question. For author-developed questions, this column is left blank unless a related concept is noted.

Q#	Question	Source / Framework	Theoretical Basis / Original Scale Item
Section 1: Demographic Information			

2	Gender:	Author-developed	
3	Age:	Author-developed	
4	Country of Origin:	Author-developed	
5	Have you experienced an earthquake before coming to Japan?	Author-developed	
6	Length of Stay in Japan:	Author-developed	
7	Level of Study:	Author-developed	
Section 2: Education and Awareness			
8	How would you rate the level of earthquake preparedness education you received in your home country?	Author-developed	
9	Which of the following topics were covered in your earthquake preparedness education?	Author-developed	
10	Have you participated in any earthquake preparedness educational programs in Japan?	Informed by PADM (Protective Action Implementation)	Indicates actual engagement in a preparedness behavior, which PADM considers a form of implementation
11	Are you aware of the location of the nearest evacuation point or shelter near your residence in Japan?	Adapted from HEPI	Do you know where your local emergency shelter is?
12	Are you familiar with the Earthquake Early Warning alarm alert in Japan?	Adapted from PPDTs	I am familiar with the disaster warning system messages used for extreme weather events.
13	Do you feel you have sufficient access to earthquake preparedness resources in Japan?	Informed by EPPM (Response Efficacy), PADM (Perceptions of Protective Actions)	EPPM- Captures response efficacy by assessing belief in the availability and effectiveness of protective measures PADM - Evaluates perceived feasibility and effectiveness of preparedness options

14	How confident are you in your understanding of earthquake preparedness measures?	Adapted from PPDS	I know which household preparedness measures are needed to stay safe in a natural hazard/disaster.
Section 3: Practical Preparedness			
15	How adequately have you prepared essential emergency supplies at your residence in Japan?	Adapted from HEPI	Do you have supplies set aside in your home in a kit to use in case of a disaster?
16	How often do you check and update your emergency supplies?	Adapted from HEPI	Do you check your disaster supplies regularly for expired items?
17	If you have not fully prepared for an earthquake, what are the main challenges or barriers you face?	Informed by PADM (Perceptions of Protective Actions)	Identifies perceived obstacles, such as cost or effort, that may reduce the likelihood of action
18	Do you have a physical copy of emergency contact numbers stored in your emergency kit or wallet?	Adapted from HEPI	Do you have written contact information of family and friends?
19	To what extent do you ensure heavy items are placed on lower shelves or secured to minimize risk?	Adapted from ERS	Do you store heavy items on lower shelves to reduce risk during shaking?
20	How effectively have you secured heavy furniture or objects to prevent them from falling during an earthquake?	Adapted from ERS	Have you secured large items such as bookcases or televisions to prevent them from falling?
21	Have you practiced or walked the route to your nearest evacuation point in Japan?	Informed by PADM (Protective Action Implementation)	Reflects rehearsal of protective actions, indicating behavioral commitment to preparedness
22	Have you participated in any earthquake preparedness practical drills in Japan?	Adapted from HEPI	Have you practiced or drilled on what to do in an emergency at home?
Section 4: Behavioral Preparedness			
23	Have you discussed earthquake preparedness with friends, family, or classmates?	Author-developed	
24	How often do you review and update your personal emergency contact list or communication	Informed by PADM (Protective	Measures regularity of maintenance for preparedness, a sign of

	plan?	Action Implementation)	sustained action implementation
25	Have you practiced protective actions (e.g., drop, cover, and hold) in preparation for an earthquake?	Adapted from HEPI	Have you practiced or drilled on what to do in an emergency at home?
26	When entering unfamiliar indoor environments, do you routinely identify and mentally note the locations of emergency exits and earthquake-safe zones?	Author-developed	
27	How motivated are you to improve your earthquake preparedness in the next six months?	Author-developed	
28	If you have taken steps to improve your earthquake preparedness in the past six months, which of the following actions have you completed?	Author-developed	
Section 5: Perceived Earthquake Risk & Emotional Response			
29	How concerned are you about the risk of a major earthquake occurring while you are in Japan?	Informed by EPPM (Perceived Severity)	Reflects perceived severity, which involves an individual's beliefs about the seriousness and consequences of a potential threat
30	How likely do you think you are to personally experience a major earthquake while living in Japan?	Informed by EPPM (Perceived Susceptibility), PADM (Perceptions of Environmental Threats)	EPPM measures perceived susceptibility, defined as beliefs about one's personal likelihood of encountering the threat PADM assesses perceived personal risk, reflecting how individuals evaluate the likelihood of exposure to a hazard
31	How do you emotionally react when you experience an earthquake or feel shaking?	Author-developed	
32	How has living in Japan influenced your emotional readiness for earthquakes?	Author-developed	
33	When you hear about earthquakes	Author-	

	in other regions, how does it affect your emotional state?	developed	
34	To what extent do concerns about earthquakes interfere with your ability to concentrate on daily activities?	Author-developed	
35	What strategies do you use to manage earthquake-related anxiety?	Adapted from PPPTS	I know which strategies I could use to calm myself in a natural hazard/disaster situation.
Section 6: Confidence in Managing Earthquake Situations			
36	How confident are you in your ability to use emergency resources effectively during an earthquake?	Informed by EPPM (Self-Efficacy)	Represents self-efficacy by assessing confidence in practical skills required to manage earthquake-related emergencies
37	How confident are you in your ability to take the correct actions when you hear the Earthquake Early Warning alarm in Japan?	Informed by EPPM (Self-Efficacy)	Operationalizes self-efficacy by assessing confidence in enacting an appropriate and timely response
38	How confident are you in your ability to recall and follow preparedness measures during a sudden earthquake?	Adapted from PPPTS	I am confident that I know what to do and what actions to take in a severe weather situation.
39	How confident are you in your ability to navigate your way to safety if an earthquake occurs in an unfamiliar place?	Informed by EPPM (Self-Efficacy)	Demonstrates self-efficacy by addressing belief in one's capacity to perform protective actions under uncertain or new conditions
40	How confident are you in your ability to manage sudden fear or panic if an earthquake occurs?	Adapted from PPPTS	In a natural hazard/disaster situation, I would be able to cope with my anxiety and fear
41	How confident are you in your ability to support and reassure others during an earthquake?	Author-developed	
Comments and Suggestions			
42	Do you have any additional comments, feedback, or	Author-developed	

	suggestions regarding earthquake preparedness in Japan? Your input is valuable and will help enhance earthquake preparedness strategies for international students.		
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