Measuring Personal Emergency Preparedness: Validation of the Emergency Preparedness Checklist Across Three Samples

Nicholas W. Talisman  
George Washington University  https://orcid.org/0000-0002-6881-9843

Cynthia Rohrbeck (rohrbeck@gwu.edu)  
George Washington University  https://orcid.org/0000-0001-5680-5690

Phillip J. Moore  
George Washington University

Jennifer E. Marceron  
George Washington University

Katherine M Burns  
George Washington University

Research Article

Keywords: Emergencies, Disasters, Emergency preparedness, Personal preparedness, Household preparedness

Posted Date: November 15th, 2023

DOI: https://doi.org/10.21203/rs.3.rs-3477800/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Large-scale emergencies such as natural and human-made disasters (e.g., hurricanes, terrorist attacks) have profound, deleterious effects on human well-being, including loss of life, physical injury, psychological trauma, and financial devastation. Personal or household emergency preparedness can mitigate the impact of these disasters. Effective and psychometrically sound measures of preparedness are critical to identifying individual differences in these behaviors and testing theories of emergency preparedness. However, there are few personal preparedness measures appropriate for all disaster types, and fewer still with evidence of reliability and validity. This paper describes the development and psychometric validation of a new Emergency Preparedness Checklist (EPC), using three separate samples – university undergraduates, adults living in the DC Metro Area, and a nationwide sample of adults with physical disabilities – to demonstrate its potential generalizability. Across samples, the EPC had high levels of internal consistency and demonstrated concurrent validity. In addition, research with the EPC has shown that it is related to other constructs (e.g., perception of disaster threat, self-efficacy for emergency preparedness) as expected based on disaster theories. These findings support the EPC’s utility in research on disasters and preparedness.

1 Introduction

Disasters have been defined as causing significant harm to societal or community functioning, resulting in human, economic, and/or environmental losses that are beyond the community’s ability to cope (United Nations Office for Disaster Risk Reduction 2007). Natural and human-made disasters (e.g., hurricanes, earthquakes, mass shootings, terrorist attacks) are increasingly common. It is estimated that in 2022, there were 387 natural hazards and disasters worldwide with over 30,000 lives lost and affecting over 185 million individuals (CRED, 2023). Similarly, human-made disasters have had a widespread and growing impact, as there were 85 human-made disasters in 2020 (e.g., the Beirut explosion and riots in the US) (Bevere and Weigel 2021). Human-made events also have profound individual and social costs, including loss of life, physical injury, and psychological trauma. In addition, the cost of disasters has been increasing in recent years (Coronese et al. 2019).

Given such substantial consequences of disasters, it is crucial to develop methods to minimize their deleterious effects. Increasing emergency preparedness is one effective way. Historically in the US, individuals have depended on their governments to manage disaster risks; however, various factors, e.g., increasing numbers of individuals living with disabilities and an increasingly older population, make it imperative that some preparedness responsibilities be shifted to households (McNeill et al. 2020). Individual or household preparedness has been defined as knowledge, ability, and actions to respond to disasters before they have occurred (United Nations International Strategy for Disaster Reduction 2009), and, from the Red Cross and Red Crescent – measures taken to prevent disasters, mitigate their impact, respond to, and recover from disasters (IFRC 2023). Most studies operationalize emergency preparedness by assessing behaviors such as emergency supplies, evacuation plans, and knowledge of community or
governmental preparedness actions. Such behaviors are then measured by responses to phone interviews or surveys (Kohn et al. 2012; Levac et al. 2012).

Those who report greater preparedness are more likely to heed warnings about emergencies, ultimately saving lives (Balluz et al. 2000; Anilan and Yuksek 2017), leading to increased confidence about handling emergencies in the future (Bell et al. 2021), and greater resilience following disasters (Bravo et al. 1990; Anilan and Yuksek 2017). Conversely, a lack of emergency preparedness has been associated with negative outcomes, including property damage, serious injury, mental and physical illness, and death (Gheytanchi et al. 2007; Benevolenza and DeRigne 2019). As a result, federal agencies and national organizations such as Centers for Disease Control and Prevention (CDC, 2018), the Federal Emergency Management Agency (FEMA 2023a), and the Red Cross (The American National Red Cross 2023) have developed guidelines for emergency preparedness, which encourage people to prepare for a broad range of hazards by 1) obtaining disaster supplies, 2) creating plans for emergencies, and 3) becoming better informed about disasters.

Research has demonstrated that taking just a few basic emergency precautions (such as gathering food and water, developing an evacuation plan, and having important documents on hand), mitigate the deleterious impact of natural and human-made disasters (Ablah et al. 2009; Balluz et al. 2000; Gheytanchi et al. 2007). However, despite nationwide attempts to encourage individuals to prepare for emergencies, most people in these populations have not met recommended benchmarks. For example, a poll conducted by the American Public Health Association found that 23% of US individuals reported that they had not taken any steps to prepare for an emergency. Further, among those who said they were prepared for emergencies, 27% had not engaged in basic preparedness behaviors – storing enough medicine, food, and water to last for three days (American Public Health Association 2007; Paek et al. 2010). As another example, a study investigating the impact of 9/11 on changes in terrorism preparedness in California found that only 28% of the participants had gathered emergency supplies (Eisenman et al. 2006). In the 2021 FEMA survey, 41% of the respondents stated that they an emergency plan for their household (FEMA 2023b). Preparedness results are similar in other countries, with, for example, approximately 60% unprepared and 30 minimally prepared in South Korea (Kim and Kim 2022) and approximately 54% not knowing how to prepare and 32% not wanting to think about preparedness in China (Chen et al. 2019).

Given the importance of individual emergency preparedness, it is important to have an accurate way of measuring it. Current measures of emergency preparedness—both community and personal or household—are often limited by a lack of scope and specificity. Such measures often contain relatively few items, and in many cases, the behaviors listed in these items are described in broad, categorical terms (Eisenman et al. 2006; Council for Excellence in Government 2007). A few longer measures of personal preparedness have included evidence of psychometric support but have focused only on a single disaster type. For example, (Mishra and Suar 2007, 2012) created two disaster-specific 20-item measures for flood and heat wave preparedness. Although most measures include items assessing supplies or plans, few contain items reflecting how informed individuals are about disasters, which
experts believe is an important point of emergency preparedness. One that does – The Earthquake Readiness Scale (Spittal et al. 2006) – includes subscales assessing behaviors to increase survival post-earthquake, and behaviors to mitigate damage to buildings and contents (e.g., bolting down water heaters, purchasing insurance). That scale may provide a more comprehensive assessment of preparedness for a specific type of disaster, but cannot be easily used across all disasters. There have been few measures designed to include human-made emergencies, in addition to natural disasters, despite their growing prominence in the last twenty years (Kohn et al. 2012).

Finally, many studies rely on ad hoc emergency-preparedness measures—including longer ones focusing on survival behaviors— which have not been psychometrically validated. These include a 21-item preparedness checklist based on FEMA recommendations (Blessman et al. 2007) another 21-item checklist based on Georgia and American Red Cross recommendations (Paek et al. 2010), and a more recent 28-item checklist (McNeill et al. 2018). The 10-item Public Readiness Index, later renamed the Readiness Quotient also does not provide evidence of its reliability or validity, though it has been among the most widely used measures for overall emergency preparedness.

After development, a reliable and valid preparedness instrument that measures individual emergency preparedness for all disasters could be useful when testing theories of individual and household preparedness. Preparedness models for health-protective behavior include cognitive appraisals, particularly perceived threat and coping appraisals (e.g., self-efficacy). These include the Extended Parallel Process Model (Witte 1994; Siu 2008), Protection Motivation Theory (Rogers 1975; Grothmann and Reusswig 2006), the Health Belief Model (Rosenstock 1974), the Person-Relative-to-Event Model or PrE (Duval and Mulilis 1999), the Theory of Planned Behavior (Ajzen 1991; Yang 2015), the Protection Action Decision Model (Lindell and Perry 2012), and Socio-Cognitive Models (Paton 2013; Paton and Johnston 2017).

In summary, to measure and improve emergency preparedness, it is important to develop personal preparedness measures that are comprehensive, reliable, valid, and, ideally, applicable across diverse types of emergencies in order to be economical and prevent redundancies. Although such measures cannot include all mitigation actions necessary for all disasters, they should include items measuring emergency supplies, household plans, and knowledge about disasters as recommended by the ARC, CDC, and FEMA. They should show evidence of reliability. For example, if emergency preparedness is a single construct, the measure should be internally consistent. A preparedness measure should also be valid, both with regard to its content, and show relationships with already existing preparedness measures.

For all of these reasons, we developed the Emergency Preparedness Checklist (EPC) as a multiple-item, cross-disaster measure. We administered the EPC to samples from three different populations to obtain data demonstrating the EPC's reliability, validity, and generalizability.

2 Sample 1 Material and Methods

2.1 Participants
Undergraduates (N=319) at a private urban university in participated in this study (Wetcher 2006). The sample included 198 women, (M (age) = 19.94, SD = 1.34). The sample included Caucasians (73%), Asian or Asian American (11%) African American (6%), multiracial (4%), Hispanic/Latino (3%) and “other” (3%).

2.2 Measures

2.2.1 Emergency Preparedness Checklist (EPC). The EPC measures individual differences in personal / household emergency preparedness. Candidate items on the EPC were drawn from those frequently included on emergency preparedness organizations’ websites, such as the ARC, the CDC, and FEMA. Several faculty members in relevant fields and professionals in those organizations vetted the resulting set of items, resulting in 20 final items. The checklist was then piloted and feedback prompted further wording revisions. Participants were asked to check “yes” or “no” if they completed each action in the last year. The specific items mirror recommendations to “Get a Kit” (which includes the majority of items – e.g., “Have stored a three-day supply of water”), “Make a Plan” (e.g., “Arranged a meeting place for family/roommates outside of your household”) and “Be Informed” (e.g., “Obtained first aid, CPR or CERT training”) from the ARC, CDC, and FEMA. Recently, an additional item (“Have registered to receive emergency text notifications from your city or town”) was added, bringing the total to 21 items on the EPC. EPC items have been included in other papers (Wirtz et al. 2017; Wirtz and Rohrbeck 2018), but the psychometric properties of the EPC have not been presented until this study.

2.2.2 Readiness Quotient (RQ). The Council for Excellence in Government created the RQ, a checklist with 10 items, that was initially called the Public Readiness Index (2006). The RQ includes items assessing preparedness knowledge (e.g., “Do you know how to find the emergency broadcasting channel on the radio?”) along with seven behaviors (e.g., “In the last year, have you volunteered to help prepare for or respond to a major emergency?”) that are added to create a total score. In a national assessment, the mean number of items endorsed was 3.31 of a possible ten (Council for Excellence in Government 2007). The RQ was included as a test of concurrent validity in the current research.

2.3 Procedures

As part of a requirement for psychology courses, students participated through Survey Monkey by completing an online survey on their experience of human-made disasters (terrorism). The university’s IRB approved this study.

2.4 Results

Undergraduate participants endorsed an average of 5.8 items (4.6 SD) of the 20 preparedness behaviors on the EPC (see Table 1). The internal consistency of the EPC was high (α = .87), and higher than the internal consistency for the RQ (α = .76). Most item-total correlations were greater than .4 with the exception of Item 14, “Practiced that evacuation plan” (.352) and Item 15, “Obtained first aid, CPR or CERT training” (.352), as shown in Table 2). The EPC was strongly correlated with the RQ (r = .62, p < .001.
3 Sample 2 Material and Methods

3.1 Participants

A total of 310 adults completed a similar survey similar to the one used in the college student sample (Burns 2014; Ryan et al. 2018). The participants were predominantly women (65%; men 35%). Participants were recruited from within a 60-mile radius of the District of Columbia metropolitan area with approximately one-third each from Virginia, Maryland, and DC. The average age of participants was 32.5 years (SD=10.40). The sample was White (55%), African American (23%), Asian or Asian American (10%), Latino (5%), multiracial (5%), Native Hawaiian or Pacific Islander (1%) and “other” (1%). Over half (59%) of the sample reported being single at the time of participating. Just under half of the participants reported being college-educated, while 61.5% stated they were employed full-time, with an additional 17% reporting part-time employment. The sample was characterized by a range of reported income levels, with almost half (44%) stating they earned $50,000 or less annually, 34% endorsing between $50,000 and $100,000 annual earnings, and 22% reporting that they earned more than $100,000 in annual income (Burns 2014; Ryan et al. 2018).

3.2 Measures

Both the EPC and the RQ (described in Sample 1) were included in the data collected with this adult community sample.

3.3 Procedures

Participants were recruited through a Washington DC metro area Craigslist. After potential participants emailed researchers to indicate interest in participating, they received a consent form along with a link to an online survey on Survey Monkey. They were compensated for their time with a $10 gift card.

3.4 Results

Adults in the greater DC/Maryland/Virginia area endorsed an average of 6.4 (5.4 SD) of the 20 preparedness behaviors on the EPC (See Table 1). Internal consistency was high (α=. 91). Most item-total (or item-test correlations were above .4 with the exception of item 15 (“Obtained first aid, CPR or CERT training”; see Table 2). The EPC was correlated with the RQ (r=.81, p<.001).

4 Sample 3

4.1 Participants

Data were collected from 294 individuals throughout the US with a physical disability (Marceron and Rohrbeck 2019). The sample included 199 females and 95 males, with an average age of 44.67 years (SD = 14.38). Most participants reported identified as White (84%), while the remainder identified as ethnic minorities — African American (7%), Biracial or Multiracial (5%), and less than 2% each as Alaskan Native,
Asian or Asian American, American Indian, Hispanic or Latino, or “Other.” The level of income reported ranged, with 4% stating they earned more than $100,000 annually, 6% between $75-100,000, 36% between $25,000 and $75,000, and lastly, 42% stating they earned less than $25,000 annually. Participants included all levels of education, with approximately 13% for whom high school was their highest level of education, half that reported they had either graduated college or taken college courses and 37% had received post-graduate education or held a graduate degree. Approximately 60% of participants were single and 40% were married/living with a partner. Self-reported disability severity was measured by the WHODAS (Üstün 2010), which assesses participants’ difficulties due to health conditions including physical disabilities ($M = 82.65$, $SD = 25.75$) (Marceron and Rohrbeck 2019).

**Measures**

The EPC (described in Sample 1) was included in the data collected with this sample. The RQ was not because it was no longer in use.

### 4.3 Procedures

Participants were recruited through social media and newsletters with the assistance of individuals and organizations serving adults with physical disabilities. To be eligible for participation, participants needed to self-identify as someone with a physical disability, be over the age of 18, and live in the United States. To recruit participants, organizations serving adults with physical disabilities were contacted. If interested, participants contacted the study coordinator via email to enroll in the study. After screening for inclusion criteria, the participants were emailed a Qualtrics survey link (or a telephone interview if requested). Approximately one-third of the participants were recruited from United Cerebral Palsy, while the others were recruited by state and local agencies serving individuals with physical disabilities (Marceron and Rohrbeck 2019). After providing informed consent, participants proceeded to the survey. Participants were compensated with a $10 gift card.

### 4.4 Results

Participants with physical disabilities averaged 10.1 items ($4.3 SD$) of the 20 preparedness behaviors on the EPC (see Table 1). Item-total correlations ranged from $.141$ for item 15 (Obtained first aid, CPR, or CERT training). To $.539$ for item 13 (Developed an evacuation plan). Internal consistency of the EPC was adequate ($\alpha = .80$). EPC totals were positively correlated with the RQ ($r = .81$, $p < .001$).

### 5 General Discussion Across All Three Samples

Descriptive analyses revealed substantial variability in endorsement of EPC items across the three samples, although the more frequently endorsed items were similar. For example, the most reported emergency preparedness behavior was readily available contact information for friends and family with 62.5%, 57.1%, and 88.4% in the college student, community adult, and individuals with disabilities groups, respectively. Other most frequently endorsed items were a working flashlight and extra batteries, personal
identification information ready to take with you, and having police, fire and hospital phone numbers. For individuals with physical disabilities, several items were endorsed more often than in the undergraduate and community samples, including possession of a 3-day supply of food as well as storage of necessary medication. Rates of endorsement of EPC items across all three samples can be found in Table 1.

Traditionally, statisticians have recommended that Cronbach alpha levels should be greater than 0.80 and corrected item-total correlations are judged to be satisfactory if they are greater than 0.30 (Nunnally and Bernstein 1994; Boateng et al. 2018). Cronbach alphas for our three samples ranged from .81 to .92. In Sample 1 (undergraduates), all item-total correlations were greater than .4, with the exception of Item 14, “Practiced that evacuation plan” (.352) and Item 15, “Have obtained first aid and/or CPR training” (.352). The item that correlated highest for the college student sample was Item 4, “Stored any necessary medication.” In Sample 2 (community members) Item 17, “Emergency communication plan for family and friends,” had the highest item-total correlation, while Item 15 was again at the low end (.344). For the third sample (individuals with physical disabilities), item-total correlations were lower, ranging from .151 for Item 15 to .539 for Item 13, “Developed an evacuation plan.” Item-total correlations for the three samples are listed in Table 2. Also as hypothesized, the EPC was strongly related to the RQ in the undergraduate student and adult community samples (it was not included in the third study including individuals with disabilities), providing support for the concurrent validity of the measure.

In summary, the Emergency Preparedness Checklist (EPC) was found to be a reliable and valid personal preparedness measure in samples from three different populations. Results of the descriptive analyses for the EPC agree with prior findings that Americans are minimally prepared for disasters (Council for Excellence in Government 2007). Participants had completed one-fourth to one-half of the preparedness behaviors across samples, although there was substantial variability in the number of behaviors reported.

To ensure that the EPC’s scope was as comprehensive as possible in assessing basic emergency preparedness behaviors across all disasters, its items were designed to reflect preparedness recommendations of the ARC, CDC, and FEMA, which include three areas of preparedness — Get a Kit, Make a Plan, and Be Informed. As noted previously, most prior preparedness scales have included items reflecting emergency supplies and plans, but lack items reflecting how well individuals are informed about preparedness procedures and appropriate emergency communication (Kohn et al. 2012). In order to match the “Be Informed” preparedness guidelines, items such as “registered to receive emergency text notifications from your county” and “obtained first aid, CPR or CERT training” were included on the EPC, making this a more comprehensive personal preparedness measure than many others.

Individuals with physical disabilities had the highest endorsement rates across all preparedness behaviors. This contradicts some prior studies, e.g., (Smith and Notaro 2015) indicating that individuals with disabilities are less prepared than the general population though other studies have found that individuals with disabilities were more prepared than the general population (Eisenman et al. 2006). Our sample of individuals with disabilities reported higher education and income relative to other samples in
the research literature (Marceron and Rohrbeck 2019) perhaps resulting in the ability to better prepare than those from samples with fewer resources. One benefit of a ubiquitous measure that demonstrates the strong psychometric properties such as the EPC is that it may allow for accurate assessment across subgroups. Thus, it may be that a demographic trend that has not been previously captured may be uncovered by such a measure. Such a nuanced finding may be present here, as the population of individuals with physical disabilities appears to be more prepared for emergencies than was previously thought.

The present results with the EPC extend prior research demonstrating that most people have completed relatively few preparedness behaviors, ranging from just under six among college students to just over 10 (of the maximum 20) among the sample with physical disabilities. For comparison’s sake, the national average on the RQ has been found to be 3.1 out of 10 behaviors (Council for Excellence in Government 2007), while another study reported an average of 8 out of 18 behaviors on a related measure in their sample (Murphy et al. 2009). Across samples in the current study, certain preparedness behaviors—including contact information for family and friends, having personal identifying information, and having a flashlight with batteries—were endorsed most frequently on the EPC. On the other hand, few participants in any of the groups had obtained a local map with shelters, practiced their evacuation plan, or identified a meeting place for family or roommates (outside of their residence) in an emergency. It is possible that individuals tend to report completion of preparedness items (supplies) that they already have available, without having obtained those supplies specifically for a disaster situation.

Previous reports on risk communication during emergencies have noted that items that are more technical or take more time may be harder for the public to follow (Sugerman et al. 2012). The findings of this study support this, as items such as having received CPR training were among those endorsed least frequently. Generally, individuals were less likely to have completed behaviors that involve information acquisition, consultation with others, or practice. For example, consistent with studies reported in (Kohn et al. 2012), more respondents had engaged in obtaining supplies compared to creating evacuation plans. Individuals were more likely to report completion of some simple survival items (e.g., contact information, identification papers, flashlights, collecting food supplies) that could be useful in general and not only for an emergency. Fewer had completed more complex tasks with regard to time or resources (e.g., having a kit ready to go, practicing evacuation plans, and setting a meeting point for family/roommates, consistent with the literature (Becker et al. 2012).

There are several limitations to consider regarding the current findings. First, although the measure was evaluated in three samples reflecting distinct populations, they were convenience samples and may not represent all individuals in the general population; thus, the EPC’s performance across cultures, regions, and ages should continue to be evaluated. Finally, as technological and cultural advances are made in the preparation for, and response to, emergencies recommended preparedness behaviors may change. For example, the EPC has already been adapted by adding an item regarding emergency text alerts (included in the community sample and sample of individuals with disabilities), and items will need to be added or eliminated as personal preparedness knowledge increases.
Future studies could determine whether there is a relationship between self-reports on the EPC and behavioral (observational) measures of preparedness. Given their self-reported nature, emergency preparedness measures are subject to response bias (some individuals may be reticent to admit they are not prepared), which has yet to be addressed in preparedness research. To measure such bias, participants in emergency preparedness studies could be asked, for example, to provide their emergency contact lists and/or items in their “go-kits” to verify their self-reports of preparedness behaviors. Collecting public health information through social media sites, such as Twitter, has shown considerable promise (Park et al. 2016), and adaptation of measures such as the EPC for use through social media may allow for information gathering from more representative samples. In addition, the relationship between the EPC and participants’ readiness to change could be assessed, as other researchers have done (Paek et al. 2010) using alternative measures of personal preparedness. As personal preparedness is a health behavior, this could highlight the importance of identifying adequate motivation to be prepared when communicating about emergency preparedness. Similarly, researchers could examine the EPC within a social-cognitive model of disaster preparedness (Paton and Johnston 2017), which discusses the effect of motivation and intentions on individuals’ decisions to prepare for emergencies.

6 Conclusions

Despite some limitations, the EPC is a promising measure of personal preparedness. It is internally consistent and shows evidence of validity based on its relationship with another measure of preparedness (the RQ). In addition, the EPC has been used in tests of preparedness theories, with multiple populations, and applied to natural disasters and human-made disasters. For example, recent studies have successfully used the EPC as an outcome measure when testing self-efficacy and perceived threat impacts on emergency preparedness for parents (Ryan et al. 2018) and when testing multiple paths through which anxiety operates in preparedness (Wirtz et al. 2017).

Further use of the EPC will facilitate a better understanding of the public’s health behaviors surrounding preparedness in schools, neighborhoods, and other communities. In addition, the information gleaned from the EPC may help to inform public health policy and emergency management planning decisions in efforts targeting preparedness behaviors that are most lacking in a given setting. Finally, it is hoped that the EPC will help us to better understand and improve personal preparedness for disasters and other emergencies, and reduce the suffering and devastation they can cause.

Declarations

Statements & Declarations

Funding

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.
Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Author Contributions

All authors contributed to the study conception and design. Material preparation, and data collection were performed by Nicholas W. Talisman; Cynthia A. Rohrbeck, Philip J. Moore, Jennifer E. Marceron, and Katherine M. Burns. Analyses were performed by Nicholas Talisman and Cynthia A. Rohrbeck. The first draft of the manuscript was written by Nicholas Talisman and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

References


3. American Public Health Association (2007) National opinion survey to determine levels of preparedness for a public health crisis. Wash DC APHA


Tables
<table>
<thead>
<tr>
<th>Emergency Preparedness Item</th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stored 3 days’ worth of nonperishable food</td>
<td>24.84</td>
<td>38.41</td>
<td>66.11 (5)</td>
</tr>
<tr>
<td>2. Stored 3 day supply of water</td>
<td>22.64</td>
<td>30.66</td>
<td>48.17</td>
</tr>
<tr>
<td>3. Stored a first-aid kit in a safe place</td>
<td>39.43</td>
<td>46.02 (3)</td>
<td>60.47</td>
</tr>
<tr>
<td>4. Stored any necessary medications</td>
<td>34.28</td>
<td>35.76</td>
<td>66.45 (4)</td>
</tr>
<tr>
<td>5. Have a recently inspected fire extinguisher</td>
<td>37.03</td>
<td>27.08</td>
<td>37.21</td>
</tr>
<tr>
<td>6. Have a working flashlight and extra batteries</td>
<td>49.06 (3)</td>
<td>48.08 (2)</td>
<td>78.41 (2)</td>
</tr>
<tr>
<td>7. Have extra clothes in the car or stored in the house, ready to go</td>
<td>18.24</td>
<td>21.45</td>
<td>31.89</td>
</tr>
<tr>
<td>8. Have a map of the local area (with shelters) in the car or close by</td>
<td>15.14</td>
<td>19.10</td>
<td>10.63</td>
</tr>
<tr>
<td>9. Fire, police, hospital phone numbers readily available</td>
<td>42.90 (4)</td>
<td>40.97 (5)</td>
<td>64.78</td>
</tr>
<tr>
<td>10. Personal id information...ready to take with you</td>
<td>53.46 (2)</td>
<td>43.75 (4)</td>
<td>72.09 (3)</td>
</tr>
<tr>
<td>11. Financial information ready to take with you</td>
<td>24.92</td>
<td>27.34</td>
<td>43.52</td>
</tr>
<tr>
<td>12. Identified indoor safe area for sheltering in place</td>
<td>19.24</td>
<td>22.92</td>
<td>65.12</td>
</tr>
<tr>
<td>13. Developed an evacuation plan</td>
<td>18.24</td>
<td>22.65</td>
<td>46.51</td>
</tr>
<tr>
<td>14. Practiced that evacuation plan</td>
<td>11.75</td>
<td>11.76</td>
<td>16.28</td>
</tr>
<tr>
<td>15. Obtained first aid, CPR or CERT training</td>
<td>42.45 (5)</td>
<td>32.87</td>
<td>26.58</td>
</tr>
<tr>
<td>16. Contact information for family and friends</td>
<td>62.56 (1)</td>
<td>57.09 (1)</td>
<td>88.37 (1)</td>
</tr>
<tr>
<td>17. Emergency communication plan for family and friends</td>
<td>18.24</td>
<td>22.65</td>
<td>30.23</td>
</tr>
<tr>
<td>18. Arranged a meeting place for family/roommates outside of your household</td>
<td>11.01</td>
<td>17.01</td>
<td>17.94</td>
</tr>
<tr>
<td>19. Keep car gas tank at least half full at all times</td>
<td>17.03</td>
<td>26.04</td>
<td>39.53</td>
</tr>
<tr>
<td>20. Cash and prepaid calling card available for emergencies</td>
<td>19.56</td>
<td>24.91</td>
<td>38.54</td>
</tr>
<tr>
<td>21. Registered to receive emergency text notifications from your (town or county)</td>
<td>-------</td>
<td>20.49</td>
<td>56.15</td>
</tr>
</tbody>
</table>
https://doi.org/10.1089/bsp.2009.0022
Table 2
EPC Item-Total Correlations Across Samples

<table>
<thead>
<tr>
<th>Emergency Preparedness Item</th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Sample 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stored 3 days’ worth of nonperishable food</td>
<td>.445</td>
<td>.583</td>
<td>.362</td>
</tr>
<tr>
<td>2. Stored 3 day supply of water</td>
<td>.427</td>
<td>.552</td>
<td>.335</td>
</tr>
<tr>
<td>3. Stored a first-aid kit in a safe place</td>
<td>.511</td>
<td>.513</td>
<td>.423</td>
</tr>
<tr>
<td>4. Stored any necessary medications</td>
<td>.597</td>
<td>.633</td>
<td>.335</td>
</tr>
<tr>
<td>5. Have a recently inspected fire extinguisher</td>
<td>.429</td>
<td>.461</td>
<td>.293</td>
</tr>
<tr>
<td>6. Have a working flashlight and extra batteries</td>
<td>.481</td>
<td>.463</td>
<td>.313</td>
</tr>
<tr>
<td>7. Have extra clothes in the car or stored in the house, ready to go</td>
<td>.431</td>
<td>.564</td>
<td>.383</td>
</tr>
<tr>
<td>8. Have a map of the local area (with shelters) in the car or close by</td>
<td>.369</td>
<td>.559</td>
<td>.337</td>
</tr>
<tr>
<td>9. Fire, police, hospital phone numbers readily available</td>
<td>.555</td>
<td>.528</td>
<td>.379</td>
</tr>
<tr>
<td>10. Personal ID information...ready to take with you</td>
<td>.513</td>
<td>.507</td>
<td>.375</td>
</tr>
<tr>
<td>11. Financial information ready to take with you</td>
<td>.487</td>
<td>.541</td>
<td>.382</td>
</tr>
<tr>
<td>12. Identified indoor safe area for sheltering in place</td>
<td>.542</td>
<td>.617</td>
<td>.362</td>
</tr>
<tr>
<td>13. Developed an evacuation plan</td>
<td>.475</td>
<td>.563</td>
<td>.539</td>
</tr>
<tr>
<td>14. Practiced that evacuation plan</td>
<td>.352</td>
<td>.408</td>
<td>.352</td>
</tr>
<tr>
<td>15. Obtained first aid, CPR or CERT training</td>
<td>.348</td>
<td>.344</td>
<td>.151</td>
</tr>
<tr>
<td>16. Contact information for family and friends</td>
<td>.514</td>
<td>.524</td>
<td>.286</td>
</tr>
<tr>
<td>17. Emergency communication plan for family and friends</td>
<td>.471</td>
<td>.670</td>
<td>.501</td>
</tr>
<tr>
<td>18. Arranged a meeting place for family/roommates outside of your household</td>
<td>.450</td>
<td>.628</td>
<td>.431</td>
</tr>
<tr>
<td>19. Keep car gas tank at least half full at all times</td>
<td>.435</td>
<td>.551</td>
<td>.307</td>
</tr>
<tr>
<td>20. Cash and prepaid calling card available for emergencies</td>
<td>.414</td>
<td>.571</td>
<td>.365</td>
</tr>
<tr>
<td>21. Registered to receive emergency text notifications from (your town or county)</td>
<td>——</td>
<td>.395</td>
<td>.271</td>
</tr>
</tbody>
</table>

Note. Sample 1 - undergraduate students; Sample 2 – adults; Sample 3 - individuals with physical disabilities. The first 20 EPC items have previously been included in other studies (Wirtz et al. 2017; Wirtz and Rohrbeck 2018)