

ABSTRACT

The objective of this study was to examine previous disaster impact, threat perception, self-efficacy, and sex as predictors of university employees' preparedness for natural disasters and incidents of mass violence. A cross-sectional survey was conducted with faculty and staff members at a medium-sized university located in the southern United States. Drawing from the Extended Parallel Process Model (EPPM), a moderated mediation model was hypothesized and partially supported. For natural disasters, experience and sex had direct effects on perceived susceptibility, but perceived susceptibility did not mediate the effect of disaster experience on preparedness behavior, nor did disaster experience have a significant direct effect. However, both self-efficacy and disaster impact had direct effects on preparedness behavior, and self-efficacy further moderated the effect of disaster impact. For incidents of mass violence, perceived susceptibility significantly mediated the effect of experience on preparedness behavior, when self-efficacy was high and employees were female. As with natural disasters, experience and sex had significant direct effects on perceived susceptibility. Self-efficacy also had a significant direct effect on preparedness behavior. These results support EPPM theory in that threat messages and perceptions correspond to increased preparedness behavior when paired with self-efficacy for responding to disasters. Therefore, it is recommended that educational institutions employ disaster preparedness programs that focus on educating employees about cultivating accurate threat perceptions and building their confidence in responding to disasters.

INTRODUCTION

Exploratory studies have identified factors that sometimes predict disaster preparedness, including disaster experience, threat perceptions, and self-efficacy. However, the relationships between these factors and preparedness has been mixed in the literature, with some studies reaching contradictory conclusions (e.g. Dillon et al., 2014; Kohn et al., 2012; Wachinger et al., 2012).

Congruent with these identified preparedness factors, the Extended Parallel Process Model (EPPM; Witte, 1998) has been proposed as a theoretical model for disaster preparedness, although it has yet to be explicitly tested.

The purpose of this study was to examine previous disaster impact, threat perception, and self-efficacy as predictors of university employees' preparedness for natural disasters and incidents of mass violence.

HYPOTHESES

A moderated mediation model was hypothesized for predicting natural disaster preparedness behaviors and mass violence preparedness behaviors. The hypothesized model had the following components:

1. Previous experience with natural disasters will predict greater preparedness behaviors.
 2. The relationship between natural disasters experienced and preparedness for natural disasters will be mediated by perceived susceptibility of natural disasters.
 3. Sex will moderate the relationship between disaster experience and perceived susceptibility, with women reporting higher perceived susceptibility to natural disasters.
 4. This mediation will be moderated by impact of previous natural disaster experience, with greater impact predicting greater natural disaster preparedness.
 5. This moderation will be moderated by self-efficacy for natural disasters, with greater self-efficacy predicting greater natural disaster preparedness.
- The same moderated mediation model was hypothesized for incidents of mass violence.

PROCEDURE

A cross-sectional survey was conducted online and took approximately 10-15 minutes to complete. It was distributed via a link in an email to all university employees.

PARTICIPANTS

Participants ($N = 410$) were employees at a medium-sized university located in the southern United States. The sample consisted of faculty (33.7%, $n = 138$), academic staff (22.4%; $n = 92$), and non-academic staff (43.9%, $n = 180$).

Overall, the sample was reportedly 84% White – Non-Hispanic ($n = 343$), 7% Black/African American ($n = 27$), 4% Asian/Asian American ($n = 15$), 2% Hispanic/Latino ($n = 7$), 2% multi-racial ($n = 6$), 0.5% Native American Indian ($n = 2$), and 2% other race or ethnicity ($n = 9$).

Women comprised 65% of the sample ($n = 265$) and men comprised 35% ($n = 145$). University employees who reported their age ($n = 193$) ranged in age from 21 to 70 years old ($M_{age} = 42.8$, $SD_{age} = 11.7$). They had been employed at the university from <1 to 42 years ($M_{years} = 8.9$, $SD_{years} = 8.3$).



Natural Disasters, Incidents of Mass Violence, and Preparedness of University Faculty and Staff

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Tornado in Holly Springs Mississippi, Dec. 2015

MEASURES

DISASTER EXPERIENCE

Sum score of natural disasters, of incidents of mass violence
“Which of the following emergency situations have you personally experienced?”

1. Tornado
2. Hurricane
3. Earthquake
4. Severe thunderstorm
5. Ice storm
6. Blizzard/snow storm
7. Flood
8. Bomb threat
9. School shooting
10. Terrorist attack
11. Other

DISASTER IMPACT

Sum score for natural disasters, for incidents of mass violence
“With regard to the most recent [weather emergency or violent emergency], which of the following did you experience as a result of this event?”

1. Saw others injured or killed
2. Got injured yourself
3. Felt a direct threat to your life
4. Provided First Aid
5. Lost a significant amount of material possessions
6. Could not get in touch with other family members
7. Were separated from members of your immediate family
8. Could not get to a store for three or more days
9. Lost electricity for three or more days
10. Were forced to leave your community or neighborhood due to an evacuation order
11. Had to leave home for three or more days
12. Had to leave work/school

PERCEIVED SUSCEPTIBILITY TO DISASTERS

Mean score for natural disasters (7 items), for incidents of mass violence (3 items)
“How likely is it that each of the following situations will occur at UM in the next year?”
→ 7-point Likert-type response

SELF-EFFICACY FOR DISASTERS

Mean score for questions 1 & 2 for natural disasters (14 items), for mass violence (6 items)
1. “How sure are you that you know what to do if the following situations were to occur at UM?”
→ 7-point Likert-type response
2. “How confident are you in providing guidance to students in the event of the following situations?”
→ 7-point Likert-type response

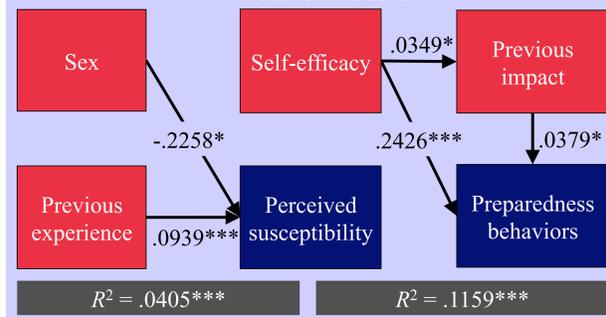
PREPAREDNESS BEHAVIORS

- Natural disaster sum score: 1-5
 - Incidents of mass violence sum score: 1-3, 6
1. Read university's mass emails with emergency information
 2. Read mass text messages with emergency alerts
 3. Have access to a first aid kit on campus
 4. Have access to a weather radio on campus
 5. Read informational posters on weather situations
 6. Watched university's informational video about responding to campus active shooter situations

RESULTS

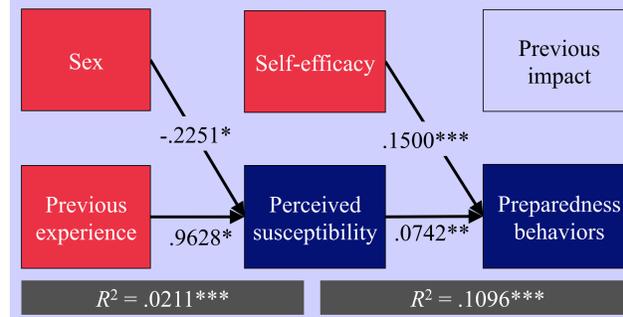
Moderated, moderated mediation analyses were conducted using ordinary least squares path analysis. To provide more interpretable coefficients, automatic mean centering was employed (Hayes, 2013).

Figure 1. Conditional Process Model for Natural Disasters



For natural disasters (Fig. 1), a greater variety of disasters experienced predicted higher perceived susceptibility to natural disasters. Sex also had a direct effect on perceived susceptibility, with women reporting higher perceived susceptibility to natural disasters than men. However, the indirect effect of experience by sex was not statistically significant, meaning that sex did not significantly moderate the effect of experience on perceived susceptibility. The direct effect of experience on preparedness behavior was not statistically significant. Furthermore, a bias-corrected bootstrap confidence interval for the indirect effect of experience on preparedness behaviors through perceived susceptibility, based on 1000 samples, was not entirely above zero. Thus, experience did not appear to have a direct effect on preparedness behavior, nor did perceived susceptibility mediate this effect. However, there was a significant direct effect of disaster impact on preparedness behaviors, with higher impact predicting greater preparedness behavior. Similarly, self-efficacy had a significant direct effect on preparedness behavior, with higher self-efficacy predicting greater preparedness behavior. Beyond the simple effects of self-efficacy and disaster impact on preparedness behavior, there was an interaction effect between self-efficacy and disaster impact. In other words, self-efficacy moderated the effect of disaster experience on preparedness behavior.

Figure 2. Conditional Process Model for Incidents of Mass Violence



With incidents of mass violence (Fig. 2), a greater variety of incidents of mass violence experienced predicted higher perceived susceptibility to incidents of mass violence. Sex also had a direct effect on perceived susceptibility, with women reporting higher perceived susceptibility to incidents of mass violence than men. However, the indirect effect of experience by sex was not statistically significant, meaning that women did not report significantly higher perceived susceptibility than men with similar disaster experience. The direct effect of experience on preparedness behavior was not statistically significant. However, higher perceived susceptibility predicted greater preparedness behavior. A bias-corrected bootstrap confidence interval for the indirect effect of experience on preparedness behavior through perceived susceptibility, based on 1000 samples, was not entirely above zero for all levels of the moderators, meaning that perceived susceptibility did not mediate the effect of experience on preparedness behavior across all conditions. However, bias-corrected bootstrap confidence intervals were above zero under all conditions in which females reported moderate to high self-efficacy. In other words, perceived susceptibility mediated the relationship between experience and preparedness behavior, which was moderated by sex and self-efficacy. Additionally, self-efficacy had a direct effect on preparedness behavior.

DISCUSSION

Disaster experience, perceived susceptibility, and self-efficacy are sometimes correlated with preparedness behavior, but this is not always the case (Kohn et al., 2012; Wachinger et al., 2012). The present findings for incidents of mass violence clarify the correlational discrepancy and corroborate Dillon et al.'s mediation (2014), in accord with EPPM theory; the role of perceived susceptibility as a mediator supports the theory that external threat messages (e.g., experience) contribute to threat perceptions, which contribute to danger control processes (e.g., preparedness behavior).

Furthermore, the current study's findings on natural disasters support the EPPM theory that external stimuli influence threat perception, and that both threat messages and self-efficacy are related to engagement in preparedness behavior. Taken together, the models for natural disasters and incidents of mass violence suggest that individuals are more likely to prepare themselves for disasters when they have greater threat perception and greater self-efficacy.

Therefore, it is recommended that institutions, organizations, and individuals engaging in disaster preparedness efforts should neither use scare tactics nor rely on confidence-building without acknowledgment of possible threats. Instead, it is recommended they educate individuals with (1) accurate threat information and (2) accurate information on their capacity to prepare and to respond effectively.

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