



# Responding to risk: Awareness and action after the September 11, 2001 terrorist attacks <sup>☆</sup>



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## ABSTRACT

Adoption of preparedness measures among the US public remains low after the expansion of the all-hazards approach to personal preparedness campaigns following the terrorist attacks of September 11, 2001 (9/11). This study sought to understand factors influencing preparedness behavior, particularly how demographics might influence preparedness behavior and whether preparedness actions are related to preparedness attitudes and related behaviors that may prime individuals to take these actions. Using data from the 2008 General Social Survey ( $n = 1338$ ), we tested a conceptual path model of preparedness that includes demographic variables and three latent variables as mediators of the effects of demographics on preparedness: Cognitive Preparedness; Peer Group Behavior Awareness, and Perceived Effectiveness. The model explains 65% of the variance in preparedness behavior. It suggests that the effects of demographic factors on preparedness actually reflect indirect relationships mediated by predisposing attitudes, behaviors and experiences, specifically, Cognitive Preparedness, Peer Group Behavior Awareness, and Perceived Effectiveness that predispose individuals toward taking preparedness actions. Because these social and cognitive factors reflect behaviors that, unlike fixed demographics, can be shaped by public education programs, efforts to increase public preparedness should focus on improving public awareness, social networks, and more persuasive messaging as keys to increasing preparedness behavior among the US public.

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## 1. Introduction

Preparedness for disasters in the United States traditionally follows an “all-hazards approach”, which suggests it is easier and more efficient to adopt a basic core framework of preparedness measures that simultaneously address multiple sources of risk. This approach was expanded after the September 11, 2001 (9/11) terrorist attacks, when the Federal Emergency Management Agency (FEMA) extended its all-hazards approach to community and citizen preparedness, based on the logic that “taking preparedness actions helps people deal with disasters of all sorts much more effectively when they occur” (FEMA Citizen Corps, 2009; Centers for Disease Control and Prevention BRFSS Morbidity and Mortality Weekly Report, 2012). But how effectively does an

all-hazards approach translate to encouraging individuals to prepare for the risk of terrorism? Does it inspire people to take action?

The 9/11 terrorist attacks afforded an opportunity to apply the all-hazards approach to personal preparedness and measure the extent to which preparedness recommendations were adopted by the public. In 2003, the federal government launched public preparedness campaigns such as Ready.gov (<http://www.ready.gov>) (FEMA), FEMA’s Citizen Corps volunteer program (<http://www.ready.gov>), and Community Emergency Response Team (CERT) training (<http://www.fema.gov/community-emergency-response-teams>), all of which employed an all-hazards approach. These efforts were followed by surveys measuring the adoption of recommended preparedness practices such as developing an emergency plan, stockpiling basic supplies, and duplicating important documents (McHugh et al., 2004; Waugh, 2004; Hodge et al., 2007; Nelson et al., 2007; FEMA Citizen Corps, 2009; Centers for Disease Control and Prevention BRFSS Morbidity and Mortality Weekly Report, 2012). The campaigns additionally encouraged vigilance to one’s surroundings and learning about terrorism, two activities specifically aimed at increasing public attention specifically to terrorism.

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Research on personal preparedness has indicated that these campaigns have had limited success. National surveys conducted between 2007 and 2012 found that less than half of the US population had taken recommended preparedness actions such as duplicating important personal documents, stockpiling supplies, or developing an emergency plan (Russell et al., 1995; Bourque et al., 2010; FEMA Citizen Corps, 2009; Kano et al., 2011; Adelphi University, 2012). The lack of public adoption of recommendations implicitly calls into question the effectiveness of the all-hazards approach in public campaigns. A national telephone survey conducted in 2007–2008 found that only a third of US households have taken recommended actions such as emergency planning and stockpiling supplies, and less than 3% of US households have taken these measures in response to terrorism, with the remaining 30% adopting them for reasons other than terrorism (Kano et al., 2011). Such low levels of preparedness in response to terrorism are consistent with other studies (Eisenman et al., 2006, 2009; Bourque et al., 2010; FEMA Citizen Corps, 2009). However, this same 2007–2008 national survey found that over 80% of these respondents became more vigilant and 60 learned about terrorism since 9/11 (Kano et al., 2011), suggesting that the risk of terrorism has not entirely been ignored by the public.

What factors might account for the lack of adoption of recommended terrorism preparedness by the public, despite the salience of terrorism issues and attention paid to terrorism issues? This paper surmises that how people think about terrorism may highlight drawbacks to the all-hazards approach, possibly due to issues related to credibility and persuasiveness. In a survey of 4461 US households by FEMA's Community Preparedness Division and Citizen Corps (2009), 82% of individuals felt that preparing and having emergency supplies would help in a natural disaster. When the question was asked regarding an act of terrorism, however, only 59% of individuals felt that such preparedness actions would help them. The researchers found that this lower sense of efficacy for terrorism reflected a sense of "fatalism" or "cynicism", as 35% of individuals believed that nothing they do to prepare would help them handle an act of terrorism, possibly suggestive of the "stress-appraisal model", which predicts that when aspects of a threat are perceived to be impossible to control, an individual who feels threatened will deny its existence rather than take proactive action (Russell et al., 1995; Lee and Lemyre, 2009). It is possible that the all-hazards approach's premise that core preparedness measures are applicable across the range of uncertain disasters is not credible to a public frightened by the unpredictability of terrorism.

To analyze possible explanations for the lack of preparedness adoption, this study sought to better understand the factors driving preparedness. Previous research has studied the relationship between demographic variables and preparedness actions, with divergent findings about the effects of Socioeconomic Status (SES—measured by levels of education and income), having children in the home, gender, race, and age, on personal preparedness (Mileti and Darlington, 1997; Lindell and Perry, 2000; Fothergill and Peek, 2004; Eisenman et al., 2006; Lee et al., 2009; Bourque et al., 2010; Heslin et al., 2013). Previous research has also focused on how attitudes and perceptions about preparedness, prior disaster experiences, and preparedness-related behaviors can influence preparedness behaviors (Mileti and Darlington, 1997; Kano et al., 2011; FEMA September, 2013). This study suggests a third relationship that has not previously been studied: the influence of demographic factors on attitudes, perceptions and related behaviors that, in turn, predispose individuals to take preparedness actions. In proposing a path model, this study sought to better understand the possible explanations as to how demographics might influence preparedness and whether preparedness actions are related to

preparedness attitudes and disaster-related behaviors that may prime individuals to take these actions.

### 1.1. Conceptual framework

We propose a path model of preparedness (as shown in Fig. 1) that includes demographic variables and introduces three latent variables as mediators of the effects of demographics on preparedness actions: Cognitive Preparedness, Peer Behavior Awareness, and Perceived Effectiveness. This model suggests that the effects of demographic variables (gender, age, socioeconomic status, and presence of children in the home) on preparedness actions may actually be indirect effects mediated by social and cognitive factors. Those of higher socioeconomic status, for example, may tend to have social networks that emphasize discussion of risk prevention measures and information about risk. It may be this social interaction, not an individual's income or educational attainment, which influences preparedness directly.

## 2. Methods

### 2.1. General Social Survey sample participants and procedure

The General Social Survey (GSS), which has monitored social and demographic changes in the US since 1972, is conducted biennially by the National Opinion Research Center (NORC) at the University of Chicago (Smith et al., 2011). The GSS is a probability sample of the adult household population nationally. The entire 2008 GSS sample included 2023 participants, but the survey was designed so that only 1342 participants were asked the questions dealing with responses to the 9/11 terrorist attacks. Complete data is available for 1338 of those respondents who answered all the questions. Thus the analytic sample is comprised of 1338 observations.

### 2.2. Variables

#### 2.2.1. Demographics

Previous work has analyzed whether older persons, non-whites, and persons with less education and income are more vulnerable to disasters (Bourque et al., 2010; Fothergill and Peek, 2004; Mileti and Darlington, 1997). Education, race, age, gender, and income may indicate social positionality and barriers such as lack of resources, or facilitators such as social embeddedness (Bourque et al., 2010; Fothergill and Peek, 2004; Lindell and Perry, 2000). Income and education may be proxies for literacy, language, and trust in official information—factors that may hinder disadvantaged individuals from learning how to prepare. Higher levels of preparedness have been found to be associated with higher levels of education (Lee and Lemyre, 2009; FEMA Citizen Corps, 2009) and income (Bourque et al., 2010, p. 24; FEMA Citizen Corps, 2009). Given this context, years of education (ranging from 1 to 20 years) and income, which was scaled from 1 to 25 (1 = less than \$1000, 25 = \$150,000 or over), were used as indicators of socioeconomic status (SES), a latent variable.

Age has also been found to influence preparedness, with individuals ranging from ages 30 to 55 being the most prepared (Eisenman et al., 2006; FEMA Citizen Corps, 2009). Thus, we included age as a continuous variable.

Eisenman et al. (2006) found men to be less likely to have emergency supplies than women, while other studies found women less likely than men to have taken preparedness measures (Bourque et al., 2010; FEMA Citizen Corps, 2009; Centers for Disease Control and Prevention BRFSS Morbidity and Mortality Weekly Report, 2012). A comprehensive analysis of gender and preparedness

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