



The dynamic role of perceived threat and self-efficacy in motivating terrorism preparedness behaviors

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ABSTRACT

Past research on perceived threat and self-efficacy, two central components in theories of household disaster preparedness, has revealed only weak relationships. One possible explanation is that threat and self-efficacy may play a more important role at early stages of preparedness motivation or readiness (i.e., in motivating the individual to contemplate taking action) than at later stages (i.e., in moving the individual from contemplation to action). In this study of 290 participants from a cross-sectional community survey, between-stage multinomial logistic regression revealed that perceived likelihood of a future terrorist attack, and (to a lesser extent) perceived self-efficacy to cope with a future terrorist attack, exert more influence on *planning* to take action than on actually *taking* action. Another form of threat, perceived severity, had little independent influence. These results comport with a central thesis of the Socio-Cognitive model, viz. that readiness stage moderates the impact of cognitive appraisals on preparedness. Elevated appraisals of likelihood and self-efficacy are necessary but not sufficient for individuals to adopt preparedness behaviors, exerting their greatest influence early in the decision-making process.

1. Introduction

Disaster risk reduction models consistently recognize the importance of sustained household preparedness including (for example) maintaining a multi-day supply of food and water, working flashlights, and battery-operated radios [2]. Two factors that are commonly viewed as important determining factors of household preparedness level are perceived threat (i.e., perceived likelihood that an event will occur for which preparedness actions need to be taken) and perceived coping ability (i.e., the extent to which the individual feels capable of taking effective action to combat the event). Protection Motivation Theory (PMT: [31,30]), a theoretical perspective often used to model individual variation in disaster risk reduction behavior, is centered around these two factors (e.g., [37]).

The relatively limited ability of perceived threat and coping to explain differences in household preparedness behavior has led disaster risk reduction scholars to formulate “stage” models such as the Protective Action Decision Model (PADM: [16]) and the Socio-Cognitive Model (SCM: [26,27]), where the salience of perceived threat and perceived coping depends on the readiness level of the individual to adopt the change. The Socio-Cognitive Model, for example, posits that perceived threat and self-efficacy are particularly influential at the

early stages – forming a behavioral intention to prepare for a disaster – but play a comparatively small (possibly null) role at later stages, as intention is translated into action. The more nuanced “differential-stage” hypothesis of perceived threat and self-efficacy prescribed by the SCM – which has been used to model preparation for bushfires [23] and earthquakes [2] – may explain the relatively poor performance of historical models such as PMT to predict disaster preparedness behavior: under the SCM, higher levels of perceived threat and self-efficacy would be a necessary but not sufficient condition for adopting preparedness behavior.

While stage-based studies have investigated preparedness for *natural* disasters such as bushfires and earthquakes, comparatively little is known about their applicability to preparedness for *human-made* disasters such as terrorist attacks on food, water, and electrical distribution systems. Studies have clearly demonstrated public concern about such attacks: each year since 2002, between 34% and 51% of Americans have reported “a great deal” of worry about a terrorist attack [20], spiking with each new terror attack and then declining over time [21]. However, this concern is not necessarily translated into taking preparedness actions. Based on a nationwide survey, Torabi and Seo [34] reported that only 15% of all U.S. households had gathered emergency supplies more frequently as a result of the September 11, 2001, terrorist

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attacks. Similarly, Eisenman et al. [11] found that 28% of Los Angeles residents had stockpiled supplies due to terrorism concerns, and 17% had developed an emergency plan because of terrorism. These numbers are substantially lower than the number of people who are greatly concerned about terrorism. The present study investigated whether a stage-based model at least partially explains this discrepancy.

1.1. Stages of Change Model

The “Stages of Change” or Transtheoretical Model (TTM: [29]) posits a sequence of ordered stages through which individuals pass, ultimately leading to the adoption of behavior change (e.g., cigarette cessation, alcohol consumption reduction, consumption of more fruits and vegetables, etc.). The TTM asserts that the factors influencing the transition from one stage to another are stage-dependent, and that therefore individuals who have not expressed an intention to adopt a given health-promoting behavior are likely to be influenced by a different set of factors in transitioning to the intention stage than those who have made the decision to adopt the behavior but have not yet done so. Although there is debate about the number of stages and whether a continuum underlies the stages (e.g., [36]), applications of the TTM generally recognize that the salient factors which influence individuals to move between stages are stage dependent. To the extent that perceived threat and self-efficacy influence individuals at proximal – but not distal – stages leading to action, the Transtheoretical Model offers a possible explanation for the weak appraisal-action link often reported in empirical studies.

1.2. The Socio-Cognitive Model

The Socio-Cognitive Model (SCM) developed by Paton and colleagues [26,27] proposes a stage model for disaster preparedness in which risk perception and self-efficacy (among other factors) influence behavior *intention*, and have little (or no) direct influence on the transition from behavior intention to actually taking action. Thus the SCM extends the generic TTM stage model by positing the particular stage at which perceived threat and self-efficacy will have their greatest salience. To the best of our knowledge, no study to date has tested this differential-salience hypothesis.

1.3. Importance of investigating cross-stage differences

Recent empirical disaster preparedness studies have attempted to integrate theoretical cognitive frameworks (notably PMT) with the Transtheoretical Model [14,19,3]. While these studies have produced results that are suggestive of cross-stage differences in the salience of cognitive appraisal factors, they have approached the question by reporting statistically significant *within* stage appraisal-preparedness relationships. Although this approach allows for the determination of whether a given cognitive factor has crossed the within-stage threshold of “statistical significance”, it does not provide a sensitive assessment of cross-stage differences in cognitive effects. Alternative analytical approaches have produced mixed results. Treating stage as a continuous variable, Paek et al. [25] found that people who expressed more confidence in their ability to prepare for an emergency tended to be at a more advanced stage of readiness, although that study did not address differences in the salience of self-efficacy across TTM stages. Lindell and Whitney [17] found no significant relationship between risk perception and either intention to adopt earthquake hazard adjustments or the actual adoption of hazard adjustments.

1.4. Importance of investigating individual preparedness actions

Disaster preparedness research has shown the importance of investigating preparedness actions separately, rather than grouping them together in order to form a count of preparedness actions. Lindell and

Perry [15], for example, found that adoption of specific protective actions in anticipation of a disaster was more strongly correlated with perceived characteristics of the actions (such as efficacy, difficulty, perceived behavioral control, social approval, and cost: see [10]) than with perceived characteristics of the disaster. Lindell and Whitney [17] found that perceived attributes of the action had stronger correlations with adoption than other factors such as demographic characteristics and characteristics of the disaster. These studies suggest that any application of the Transtheoretical Model to an understanding of the importance of perceived threat and self-efficacy to disaster preparedness adoption should be focused on the individual preparatory actions, rather than on a general measure of preparedness.

1.5. Purpose of present investigation

In this study, we investigate the potential impact of perceived threat and self-efficacy on 20 preparedness actions at three stages of readiness derived from the Transtheoretical Model: precontemplation (no intention to act), contemplation (intention to act in the next six months but no actual action at the present time), and action, with respect to actions that could be taken to prepare for disasters in general, and terrorist attacks in particular. Since 9/11, there has been growing researcher recognition that despite the worldwide increase in terrorist attacks, individual preparedness for terrorism is low, similar to preparedness for other types of disasters [4]. Extending the perceived threat/self-efficacy component of Paton and colleagues’ Socio-Cognitive Model [26,27] to focus on specific behaviors that could be taken to prepare for terrorist attacks, we test the hypothesis that the influence of threat and self-efficacy appraisals is greater on *planning* to take the action than on actually *taking* the action.

2. Method

2.1. Participants and procedures

Following IRB approval, 353 participants over the age of 18 from the Washington, DC, USA metropolitan area were recruited in response to a Craigslist advertisement, of whom 290 provided complete data. Each responding adult who completed and emailed a consent form to the study coordinators was subsequently emailed a URL to an online survey. All participants received a \$10.00 gift card as compensation for time spent completing the survey.

Females comprised 65% of the sample. Participants ranged from 18 to 71 years with a mean of 32.3 years (SD = 10.4). More than half (54%) self-identified as Caucasian, 22% African American, 10% Asian or Asian American, 5% Latino, 6% biracial or multiracial, and 1% Native Hawaiian or Pacific Islander individuals. Most individuals were single (60%); 33% were married or partnered, 4% were divorced, and 3% were separated. A total of 61% were employed full-time, 18% were employed part-time, 13% were unemployed and job searching, and 8% were not currently working and not looking for employment. A total of 13% did not complete high school, 20% attended some college, 46% completed college, 13% completed a Master’s degree or equivalent, and 8% completed a professional degree (e.g., PhD, MD, JD). More than half of the sample (54%) reported earning \$50,000 or less, 33% reported earning between \$50,000 and \$100,000 and 23% reported earning more than \$100,000 annually. This profile is similar to census estimates for the District of Columbia regional area [22], suggesting the generalizability of the results presented here to that larger population and potentially to other similar large urban areas.

2.2. Measures

Similar to the approach adopted in other investigations involving disaster preparedness [19,3], this study focused on three readiness stages developed and tested by Prochaska, DiClemente, and their

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