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Developing Resilience Through Communication and Community: Natural Disaster Preparedness in Retirement Communities

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Developing Resilience Through Communication and Community: Natural Disaster Preparedness in Retirement Communities

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Dedication

To my grandparents.

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Abstract

Developing Resilience Through Communication and Community: Natural Disaster Preparedness in Retirement Communities

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Older adults are considered one of the most vulnerable populations in natural disasters, and our knowledge of the communicative processes behind their disaster preparations is limited. Extant research has called for more scholarship to understand the antecedents to their preparations. One promising area in the literature is the notion of community for older adults. While perceptions of community have positive health benefits, there is little work that investigates the role of community perceptions in the natural disaster context for older adults. The focus of this effort is to bring more attention to the role that community and organizations have on risk behaviors for older adults by extending Witte's (1992) Extended Parallel Process Model (EPPM). To accomplish this goal, this study incorporates the concept of community-efficacy into the perceptions of efficacy component of the model to better understand intention toward preparing in advance for natural disasters for older adults living in continuing care retirement communities (CCRCs). EPPM, generally an individual-centered health communication theory, includes the concepts of threat and efficacy, but overlooks a collective component, community-efficacy. Using quantitative survey data from two CCRCs in U.S., this research contributes

to communication scholarship by highlighting how community-efficacy uniquely explains a significant, but small amount of additional variance on the intention to prepare for natural disasters above all other predictors in EPPM.

This dissertation's extension of the perceived efficacy components of EPPM can be useful at predicting older adults' future disaster preparedness behaviors. Given the role of community resilience during natural disasters, as well as the beneficial impact of community within retirement communities, this dissertation examined several variables that influence the intention to prepare. The results show that disaster management perceptions, community identification, and response-efficacy moderate the relationship between community-efficacy and intention to prepare, while previous experience with natural disasters and communication with others before a natural disaster predicts the intention to prepare. Together, the investigation of these variables provides insight into both theoretical and practical considerations needed for understanding disaster preparations in the older adult context.

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Chapter 1: Introduction

> We as individuals need to get back to a "be prepared" mentality that served the nation through periods of both war and peace in the past, through periods of economic prosperity and during times of personal and national austerity. No matter how challenging the time, America has always been and will always be strongest when we ensure that our people are strong.
>
> Embracing this culture of preparedness starts not in Washington, DC, but at home. We need to work to encourage everybody to question how prepared they are, and to act. Do you have CPR training? Do you know how to shut off the water valves and the gas valves in your home? Do you know what to do when a disaster strikes?
>
> This journey does not begin and end at home, but moves out to spawn a culture where neighbor helping neighbor is not just a phrase or an idea, it is the reality. Citizens are the true first responders, so you need to be the help until help arrives. (Brock Long, Former Administrator of the Federal Emergency Management Agency, 2018, p. 1)

Improving levels of preparedness for crises and natural disasters is an urgent priority and creating a lasting culture of preparedness remains challenging (Long, 2018). Despite numerous non-routine catastrophic events that cause physical impacts and social disruptions, as well as sizable communicative health campaigns, levels of preparedness for disasters in the U.S. have not improved over the last two decades (Bader et al., 2020), and many individuals face barriers to properly prepare for looming disasters (Wood & Bourque, 2018). Creating a culture of preparedness does not mean that each individual solely bears the brunt of the responsibility to "prevent, protect against, mitigate the effects of a [potential] threat (Federal Emergency Management Agency, 2019, p. 5), but a lasting culture of preparedness is one where individuals and communities work together to be ready for potential disasters.

In the risk communication literature, disaster preparedness is considered a behavior that intends to inform or persuade the public about the potential risks of disasters, and often aims to enact long-term behavioral change (Silver, 2019). Organizational communication

scholarship has also contributed to the study of disaster preparedness by explaining how employees and emergency response personnel are trained on what to do in an emergency (Barbour & Manly, 2016; Jahn, 2016, 2019; Stephens & Boettner, 2020), as well as how organizations use previous disaster experience for future response (Chewning et al., 2013; Rice & Jahn, 2020). This study infuses concepts of risk to contribute to the ongoing literature of disaster preparedness in organizational communication.

Engaging in preparedness activities (e.g., by gathering the necessary 72 hours of emergency supplies) is practical and can be a potentially life-saving behavior (American Red Cross, 2020; Baker & Evans, 2008). Recent research suggests that less than a quarter (25%) of Americans have gathered supplies and created an emergency supply kit in their home (Bader et al., 2020). Despite the well-documented presence that older adults are one of the most vulnerable populations in natural disasters (Stough & Kelman, 2018), our knowledge of the communicative processes behind disaster preparedness for this population are limited. Considering that we live in an aging society, more knowledge is needed about the communicative processes behind disaster preparedness how older adults (ages 65 and over) process disaster information.

The purpose of the current study is to extend the Extended Parallel Process Model (EPPM; Witte, 1992) by integrating the concept of community-efficacy into the perceptions of efficacy component of the model. I incorporate disaster-related constructs—e.g., previous experience with disasters—along with community-efficacy, to better understand the intention to prepare for older adults living in continuing care retirement communities (CCRCs). Community-efficacy is defined as an individual's belief in his or her community's ability to perform a recommended behavior. It is important for communication scholarship to understand the impact that groups, communities, and

organizations have on risk behaviors; this particular work explores how older adults living in CCRCs engage in natural disaster preparedness.

Disaster preparedness functions as a form of creating resilient individuals and communities (Robertson & Stephens, 2019). As Paton (2003) observes, "Given the infrequent nature of hazard activity, the maintenance of preparedness over time is essential to sustaining individual resilience" (p. 210). By definition, resilience is a process by which individuals "reintegrate from disruptions in life" (Richardson, 2002, p. 309); thus, engaging in disaster preparedness behaviors allows both individuals and communities to reintegrate and foster productive change post-disaster, as well craft new normalcies in preparation for the future (Buzzanell, 2010, 2018). It makes sense to explore how preparedness evokes resilience in vulnerable communities, such as within retirement communities.

Most work on EPPM explains individual-level behaviors, and not the impact that groups, communities and organizations may have on risk behaviors (Roberto et al., 2009). Heath and Lee (2016) suggest that communities with fully functioning risk communication infrastructures are better able to manage natural disasters because of the social connections that flourish and create resilience; in this study, I explain how other organizational factors (such as identification with one's community) influence preparedness. This extension of the perceived efficacy component of EPPM can provide a nuanced understanding of how community-efficacy impacts the intention to prepare among older adults and contributes to communication scholarship by exploring the role of community for older adults in the natural disaster context.

DISSERTATION OUTLINE

Given that preparing in advance is a life-saving behavior, the communicative understanding of disaster preparedness certainly warrants scholarly consideration. In an

effort to extend what we know about natural disaster preparedness in an organizational context, Chapter 2 reviews the literature that supports this research. In particular, I discuss how notions of community resilience, identification, and constructs from organizational communication research can be incorporated within the study of disaster preparations. I also provide a rationale for studying the older adult context, and more specifically, retirement communities in terms of their resident preparedness. Chapter 2 concludes with a series of hypotheses and research questions informed by previous theory and literature on community resilience and risk behaviors.

In Chapter 3, I provide a detailed explanation of the procedures for data collection and analysis. Additionally, I describe the process of gaining access to the research sites, as well as the measures used in the quantitative survey. Then, in Chapter 4, I provide the results to the research questions and hypotheses. Overall, Chapter 4 illustrates the explanatory value of including community-efficacy as a component of perceived efficacy within the model. Furthermore, this extension provides a starting point for future contributions from both organizational and health communication scholars concerned with understanding the role of community on risk behaviors.

Lastly, Chapter 5 reflects on the study's findings considering the present literature and theory guiding this study. In this extension of EPPM, I demonstrate the importance of explicit and implicit community and organizational communication surrounding natural disaster preparedness. Bearing in mind the limited studies about older adults and aging within organizational communication, this dissertation concludes with a research agenda for future work to continue exploring this important subject.

Chapter 2: Literature Review

Disaster Preparedness Communication

The range of scholarship about natural disasters, in particular the process of preparing in advance for natural disasters, is as varied as the fields that take interest in this activity. Anthropology, business, disaster management, economics, environmental science, geography, information science, psychology, public health, sociology, and communication all approach preparedness differently, and all have their own theories and models to understand this phenomenon (Federal Emergency Management Agency, 2015). Aside from these disciplinary silos, there is agreement that preparing emergency supplies in advance of a natural disaster is important behavior that can save lives when disaster does strike (Bader et al., 2020; Baker & Evans, 2008; Tierney et al., 2001). Because natural disasters can affect "societies or their larger subsystems (e.g., regions and communities) that involve conjunctions of physical conditions with social definitions of human harm and social disruption," preparing emergency supplies can mitigate the impact individuals experience with these non-routine disruptions (Kreps, 2001, p. 3718).

Most work in communication about natural disasters is situated within the risk and crisis communication subfields (Houston, 2012). Yet there remain sharp differences between risk communication and crisis communication in terms of disaster-related research. In Silver's (2019) review of the literature, she differentiates between risk communication (defined as messaging to inform or persuade about potential risks and enact long-term behavioral change to reduce or avoid harm) and crisis communication (defined as messaging about an ongoing emergency that "seeks to explain [a] specific event, identify likely consequences and outcomes, and provide specific, harm-reducing information to affected communities in an honest, candid, prompt, accurate and complete manner;"

Reynolds & Seeger, 2005, p. 45). This differentiation is important because it suggests inherent epistemological distinctions within the study of natural disasters. Crisis communication scholarship is generally interested in understanding how "communication [serves] as a tool to manage public expectations and minimize backlash; repair an organization's image and improve stakeholder confidence" (Silver, 2019, p. 3). In contrast, risk communication scholarship seeks to explore how non-routine events affect the "iterative exchange of information among individuals, groups, and institutions related to the assessment, characterization, and management of risk" (McComas, 2006, p. 76). In this dissertation, I use concepts of risk to frame natural disasters and apply concepts of community to make an organizational communication contribution.

A burgeoning interest in interactions has remained at the forefront of disaster-related communication scholarship (Chewning et al., 2013; Doerfel et al., 2010; Smith et al., 2018; Spialek & Houston, 2018; Stephens et al., 2018). While previous natural disasters often receive considerable media attention, the aftermath of these natural-scientific events are just one part of the definition. In contrast, terrorism events (e.g., Reedy et al., 2012) bring out vulnerabilities on both micro and meso levels of societies and organizations that are severe enough to cause human harm. Other events such as the rapid spread of infectious disease (e.g., influenza spreads; Reynolds & Quinn, 2008; Galwankar & Clem, 2009) and oil spill accidents (e.g., Stephens & Barrett, 2016) have also been classified as disasters. These technological, health, and sociopolitical events evoke vulnerabilities in society, just as natural events do (Cutter, 2001). Regardless of the impact of various types of disasters, there is agreement that preparing emergency supplies beforehand is a life-saving behavior (Bader et al., 2020; Baker & Evans, 2008). This dissertation contributes to scholarship about disaster preparedness by examining the communicative antecedents that can motivate others to prepare.

The purpose of this study is not to show where other models and disciplines fall short in capturing the natural disaster preparedness process. Rather, this research takes an interdisciplinary approach to preparation, noting the gaps that both organizational and health scholars leave unaddressed in the context of a vulnerable population: older adults. The focus of this effort is to bring more attention to the role that community and organizations have on risk behaviors by extending Witte's (1992) Extended Parallel Process Model (EPPM). Witte's (1992) original EPPM is largely viewed as an individual-centered health communication theory, and the adaptations to this model are justified by literature on older adults, as well as organizational communication scholarship on community resilience and community-efficacy. To begin, however, it is useful to make explicit the current understanding of disaster preparedness in communication scholarship.

CONCEPTUALIZING DISASTER PREPAREDNESS

Research on the impact of natural disasters is important for predicting the outcomes of future disruptions. However, much research places emphasis on disaster response and recovery (Chewning et al., 2013; Doerfel et al., 2010), rather than focusing on prevention and preparedness ahead of natural disasters (Paton, 2003). Since the 1970s, there has been a scholarly shift toward creating and implementing a disaster management model that includes response and recovery, but also includes phases where behaviors and communication take place before a disaster strikes: prevention, preparedness, and mitigation (Cronstedt, 2002).

As a temporal stage of the disaster life cycle, disaster preparedness is described by Paton (2003) as the behaviors modeled before a natural disaster to manage with real or anticipated consequences of disaster response and recovery. Behaviors involved in disaster preparedness have since been a major focus in disaster-related research (Federal

Emergency Management Agency, 2015), and communication scholarship has begun to follow suit in detailing these processes and interactions (Reynolds & Seeger, 2005; Sellnow et al., 2002). Broadly, the purpose of disaster preparedness is to improve the capability of individuals and organizations to act when a disaster occurs (Houston, 2012). The process of disaster preparedness usually starts with some form of an analysis of vulnerability, in which stakeholders try to predict likely psychosocial consequences, based on levels of vulnerability, and then develop effective ways to address those problems (Tierney et al., 2001). This process allows for individuals, communities, and emergency management organizations to build strategies considered appropriate for disaster response.

The preparedness stage encompasses actions undertaken before disasters affect societies, allowing agents to react actively when the disaster occurs (Tierney et al., 2001). Many scholars have proposed phases that include preparedness in the disaster management cycle. Some, like that of the National Governors' Association (1979), classify the fundamental phases into four distinct stages: prevention, preparedness, response, and recovery. Recent scholarly conversations have merged the first two phases, detailing three stages: preparedness, response, and recovery (Pfefferbaum & Klomp, 2013). In contrast, some scholarly models have highlighted functional disaster management comportments instead of stages (Cronstedt, 2002). Notwithstanding this disagreement about the exact labels of necessary disaster management phases, there is a general understanding that actions taken beforehand, including reducing risk and building resilience, are crucial (Pfefferbaum et al., 2012). We know that, in the future, natural disasters will continue to strike, and by enhancing natural disaster preparedness efforts on both individual and institutional levels, we can reduce the impact of these potentially catastrophic disruptions (Medina, 2016).

Communicating Preparedness

On an individual level, preparedness activities include gathering necessary emergency supplies, developing an emergency communication and evacuation plan for the household, and anticipating other problems that a disaster can create (Burke et al., 2010). While these steps may not be complex for individuals to undertake (Ashida et al., 2016), scholarship in preparedness has not always been translatable to practitioners actively involved in preparedness planning and execution (Spence & Lachlan, 2010). According to the Federal Emergency Management Agency's (2017) preparedness report, there are still ongoing challenges to the disaster preparedness stage. These include "inspiring individuals to prepare for emergencies" and "improving responder capacity and coordination" in disaster events (Federal Emergency Management Agency. 2017, p. iii). These challenges can be explored through greater scholarly understanding of communicating risk to both individuals and communities.

In Houston's (2012) breakdown of the disaster lifecycle, he explains the communication-based activities that encompass preparedness. The two communicative objectives of preparedness are improving individual and community disaster preparedness and increasing individual and community resilience. These objectives can be met by "provid[ing] information about risk, individual and community preparedness, and existing disaster plans, develop[ing] community connections/relationships, engag[ing] community in discussion of risks, planning, and response, and inoculat[ing] against disaster-related distress" (Houston, 2012, p. 287). Unpacking how organizations and communities can engage with these behaviors is vital, as communicating preparedness involves going beyond the individual unit of analysis and moving to a deeper understanding how organizations and communities function to inspire preparedness (Federal Emergency

Management Agency, 2019). Houston (2012) argues that clarifying the many domains of preparedness should be at the forefront of future research in order to increase resilience.

Disaster Preparedness and Organizational Communication

One sub-discipline of communication that has begun to provide a useful perspective in the study of disaster preparedness is organizational communication. This section will explain how organizational communication scholarship has contributed to the study of disasters to date and consider the field's initial exploration of preparedness. Most work in organizational communication within the realm of disasters has focused on coordination during a disaster, as well as organizational recovery following a disaster (Chewning et al., 2013). When natural disasters strike, all levels of infrastructure can be affected. "Organizations affected by natural disaster often have a desire to return and reopen, but they face obstacles, from extensive physical damage, missing or dislocated personnel and missing community members and customers, to failed communication and technological infrastructures" (Chewning et al., 2013, p. 238). Chewning et al. (2013) studied how information and communication technologies (ICTs) were used by organizations to aid recovery efforts after Hurricane Katrina. In their research, many organizations stated that they would incorporate successful communication behaviors into their preparations for future emergencies. However, this work is rooted in the recovery stage of disasters. There remains more to learn about how preparedness functions within various types organizations, communities, and groups.

Organizational preparedness activities often include developing emergency response and communication plans, training employees and emergency response personnel on how to act in an emergency, obtaining needed emergency supplies, and conducting mock drills and exercises (Barbour & Manly, 2016; Stephens & Boettner, 2020). Myriad

research has considered how and when these activities take place within the disaster lifecycle, but these concerted scholarly efforts have not necessarily led to a lasting culture of preparedness within organizations. Organizations do not always recognize the power of communication relationships during and after disasters. Because of this, anticipating potential risks beforehand may be useful for organizations to better prepare themselves for what may strike (Chewning et al., 2013; Doerfel et al., 2010).

Institutional and Community-Level Preparedness

Organizational communication scholarship, in particular, has sought to examine natural disasters through themes of institutional norms, coordination, and collaboration. Organizing for preparedness, is, of course, easier said than done. Organizational communication disaster research has explained the role of first responders during an emergency (Jahn, 2016, 2019), organizational structures and social capital for response (Doerfel et al., 2010), and the communication strategies that take place during or after a disaster (Chen et al., 2008). These research emphases represent varying stages of the disaster lifecycle, with the exception of preparedness.

Barbour and Manly's (2016) work is a notable exception to this pattern. These scholars studied Community Emergency Response Team (CERT) and Medical Reserve Corp (MRC) volunteers' accounts of disaster preparedness, arguing that the day-to-day work of preparation differs from actions in the response stage of disaster. Using institutional logics as a lens to explore preparedness, Barbour and Manly (2016) found that volunteers trained in preparedness negotiated the tensions and contradictions of their work in order to legitimize their volunteer roles. Further, these preparedness negotiations often occurred during the actual disaster, rather than beforehand. This follows McConnell and Drennan's (2006) notion that preparedness activities may not necessary reflect the

operational realities taking place during the disaster itself. Sadly, many organizations and communities only recognize the importance of preparedness after a disaster strikes (Doerfel, 2016).

Navigating tensions of rules and norms in high-reliability organizations is part of preparedness activities and interactions (Carlson et al., 2017; Jahn, 2016; Ford & Stephens, 2018). As Ford and Stephens (2018) state in their integrated model of risk responsiveness, safeguarding employees against a potential threat requires effort from the organization to engage stakeholders in meaningful interactions before a threat occurs. Jahn's (2016) work suggests that when employees adapt safety rules in a high-reliability context, they (in her study, a group of firefighters) enable themselves to make sense of a threat. Much of this sensemaking can happen pre-disaster. By understanding the interactions that take place among organizational members, we find that preparedness may be a normative process on an institutional-level, albeit one constrained by the need to constantly justify preparedness as an integral part of organizing. Unfortunately, in many cases, preparedness is not viewed as a priority and is simply seen as an afterthought (Boin & 't Hart, 2003).

Coordination and collaboration also play a role in organizational preparedness practices (Majchrzak et al., 2007; McKinney Jr. et al., 2005). The ability to mobilize employees and volunteers swiftly has been a noteworthy challenge in the disaster literature and in communication (Iverson & McPhee, 2008). Notably, swift-action teams are expected to perform well under threat without knowledge of one another and thus may not seem part of the preparedness stage (Majchrzak et al., 2007). However, interactions among these teams during a disaster can help diagnose further crisis vulnerabilities and refine a (perhaps faltering) communication system (Coombs, 2015; Smith et al., 2018). As Majchrzak and colleagues (2007) detail, the ability to "efficiently coordinate knowledge,

people, resources, tasks, and technology, thereby substantially improving disaster response for future catastrophes" is critical (p. 147).

The Crisis and Emergency Risk Communication (CERC) model (Reynolds & Seeger, 2005; Veil et al., 2008) has made initial strides to incorporate theoretically-driven practices that embed how coordination takes place among public health professionals in a disaster. Coordination and collaboration in a disaster are only possible with dynamic and robust interconnections among organizations, households, and individuals (Acosta et al., 2017). Thus, institutions and communities are more likely to be resilient if this coordination is leveraged in advance (Houston, 2018).

THEORETICAL FRAMEWORK: THE EXTENDED PARALLEL PROCESS MODEL

While considering how organizations deal with natural disasters, scholars and practitioners have applied many different approaches for communicating risk. Most of these approaches are informed by health communication theories, as well as theories in psychology (O'Hair, 2018). This section will detail the theoretical framework proposed for this study: The Extended Parallel Process Model (EPPM; Witte, 1992). Commonly used in health communication research (see the 2013 special issue in *Health Communication*; Roberto, 2013), EPPM explains how perceptions of risk can be effective or ineffective with the elicitation of fear. While the theory is predominantly used to test the effects of messages (Witte et al., 2001; Basil & Witte, 2012), several studies have used components of EPPM in non-message design contexts to examine perceptions of risk with different health threats, as well as within various populations (Allahverdipour et al. 2007; Carcioppolo, 2008; Erret et al., 2011; Hubbell, 2006; Smith et al., 2007; Ooms et al., 2015; Rimal & Real, 2003; Witte & Donohue, 2000; Witte et al., 1992). Witte et al. (1992) rationalize that more empirical work should be done to theoretically investigate variables included within health

campaigns before testing them. Here I explain how components of EPPM can be examined in disaster preparedness research, and argue that by including an organizational perspective into the theoretical model, my dissertation offers a theoretical and empirical contribution.

Several behavioral health theories have been used for studying disaster preparedness (see Ejeta et al., 2014; Paek et al., 2010 for meta-analyses). The Extended Parallel Process Model (EPPM; Witte, 1992) is one framework that has been used in communication across a variety of health conditions (see de Hoog et al., 2007; Popova, 2012; Witte & Allen, 2000 for meta-analyses and systematic reviews). Proposed by Witte (1992), EPPM posits that threat-related stimuli are processed through two appraisals: first, perceived threat, then perceived efficacy. High levels of threat and efficacy are both needed for a person to react appropriately to a health threat. The model is similar to Self-Efficacy Theory of Behavioral Change developed earlier by Bandura and Adams (1977). When Witte (1992) created EPPM, the model was novel to communication scholarship in its differentiation between the emotion of fear and threat, as well its consideration of perceptions and cognitive appraisals of threat above and beyond just feeling a negative emotion.

Perceived Threat

Two variables are integrated within EPPM to compose perceived threat: susceptibility and severity. Perceived susceptibility refers to the extent to which an individual believes a particular event or condition will occur (Witte, 1992). Perceived severity refers to the extent to which an individual believes the consequences of the event or condition are real and true, should the event or condition occur (Witte, 1992). It is important to note that susceptibility and severity levels are not always similar; one could have a high level of perceived susceptibility but a low level of perceived severity. For

example, in the event of an earthquake, a resident could state that they are highly susceptible to earthquakes, but may not believe severity is strong given an expected low-magnitude earthquake. If the perception of the threat is low, an individual will be less motivated to follow a recommended behavior. If the perception of the threat is high, the next step is that one's level of efficacy is appraised.

Perceived Efficacy

Two variables related to efficacy are integrated within EPPM: self-efficacy and response-efficacy. Self-efficacy is the extent to which an individual believes he or she is capable of deterring the threat by endorsing the recommended behavior (Witte, 1992). Consequently, in the event of an earthquake, an individual with low self-efficacy might state: "There is nothing I can do when an earthquake hits my area." On the other hand, an individual with high self-efficacy may feel confident about deterring the threat: "I can limit the aftermath of an earthquake by taking measures beforehand." According to Bandura (2006), people differ in personal judgments of their capabilities. Self-efficacy can "influence whether people think erratically or strategically, optimistically or pessimistically. [It] also influence[s] the courses of action people choose to pursue" (Bandura, 2006, p. 309).

The other variable, response-efficacy, is the belief an individual has regarding how effective the recommended behaviors will be once enacted in preventing the threat (Witte, 1992). An individual with low response-efficacy could believe: "An emergency supply kit will not help me survive in the event of a natural disaster." On the other hand, an individual with high self-efficacy could state: "Having and using an emergency supply kit in the event of a natural disaster will be effective in survival."

Outcomes

High or low levels of perceived efficacy determine whether people will engage in danger control or fear control processes (Witte, 1994). Individuals with low perceived efficacy will likely feel afraid; they will either continue to feel afraid, or they might completely reject their perception of the threat (known as a fear control response). Conversely, an individual with high perceived efficacy will likely attempt to protect themselves against the threat (known as a danger control response). Thus, it is hoped that individuals will engage in a danger control response, though this is not always realistic. When messages emphasize how easy, feasible, and effective the recommended behavior is in preventing a serious and susceptible threat, a danger control response is more likely.

Thus, messages that emphasize higher levels of efficacy, making individuals feel capable of enacting the recommended behavior, combined with higher levels of threat, making individuals feel vulnerable to a threat, are more likely to lead individuals to follow danger control processes (Witte, 1994, 1998). A danger control response is likely to lead to the adoption of the behavioral recommendations. In order to determine the outcome of a health message and whether individuals experience fear control or danger control processes, Witte (1998) developed a formula to determine which processes would more likely occur. This can be helpful in knowing how individuals will react to a health message.

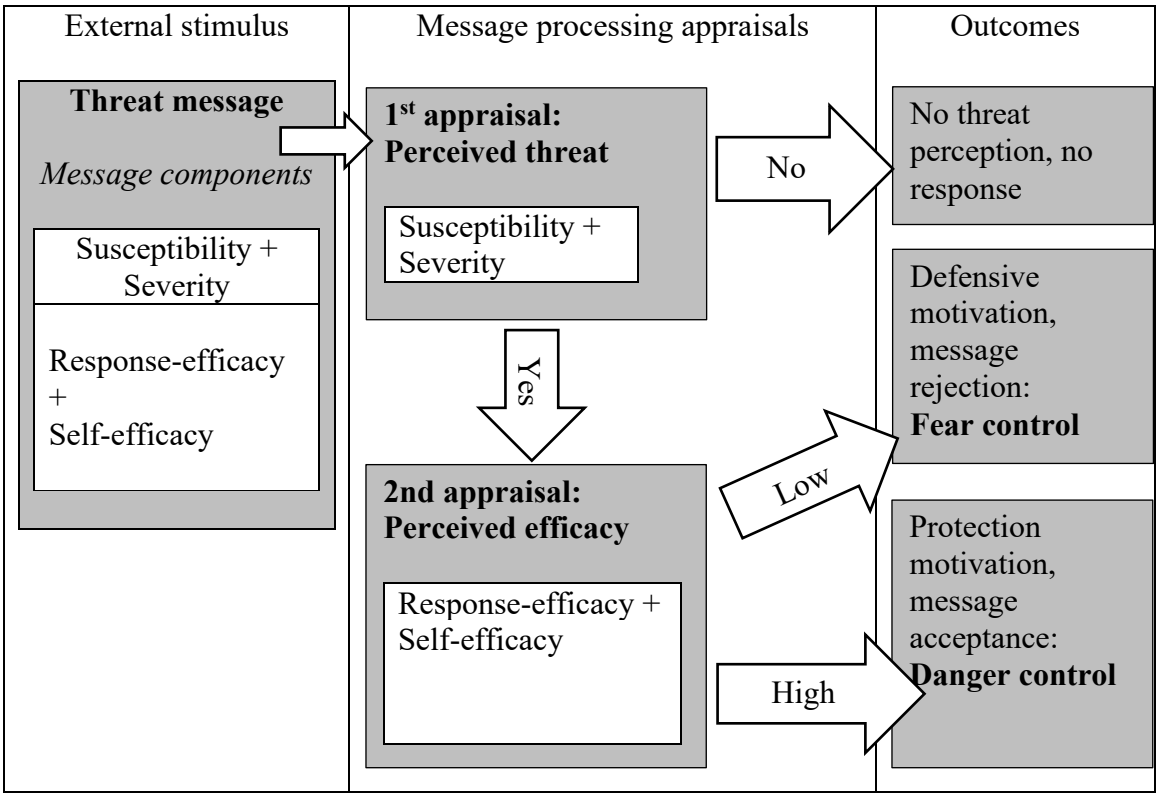

Figure 2.1. The Extended Parallel Process Model (Witte, 1992).

EPPM in Disaster Contexts

Recently, EPPM has been used in several natural disaster communication studies (Roberto et al., 2009). In a non-message design context, Beatson and McLennan (2011) stated that components of EPPM helped explain audience reactions of disaster preparedness campaign for bushfires in Australia, stating that the theory can be used above and beyond intrapersonal-levels of analyses. Erret et al. (2011) applied the model in the context of a local health department's disposition to their ability to respond to natural disasters. Results from their survey found that hospital employees who perceived themselves as unprepared before a hypothetical natural disaster were more likely to respond to a potential threat if they had higher levels of self-efficacy. These two studies

provide examples that components of EPPM have been examined and extended into the natural disaster context without testing messages.

Although the model has only recently been used in the context of natural disaster preparedness, perceived threat and perceived efficacy have been variables included in several quantitative studies and experiments in the field of communication. When individuals reported a higher level of intention to prepare, this variable significantly predicted the number of emergency supplies one had ready in the home (DeBastiani et al., 2015). In that same study, the intention to prepare was also a significant predictor of actually being more prepared. Sadly, in another study, only half of respondents who thought they were prepared had the supplies in their homes (Ablah et al., 2009).

Taken together, these findings suggest that intention to prepare greatly differs from the actual behavior of preparedness. That is, intention and behavior are two completely different constructs, a common finding in persuasive health communication research (Dillard & Shen, 2005; Roberto et al., 2009). McClure et al. (2009) note a similar challenge in distinguishing actions from outcomes. They suggest that message framing may influence the shift from intending to take action to actually taking action. However, many behavioral theories, including the Theory of Planned Behavior (Fishbein & Ajzen, 2010) use intention as a dependent variable, because motivating intention can be just a difficult as motivating the actual behavior, especially as related to disaster preparedness (Paton & Johnston; 2017; Robertson et al., 2018). Redlener (2006) suggests that intention is one of the biggest obstacles for increasing overall preparedness among the public.

Intention and behavior may differ because of the lack of perceived threat. In a study of natural disaster preparedness behavior, Wachinger et al. (2012) describes a paradox by which individuals assess their perception of risk. Individuals who have higher levels of perceived threat do not necessarily engage in preparedness behaviors. Further, Wachinger

et al. (2012) discovered that several variables, including previous disaster experience and demographic variables, were associated with perceived susceptibility, but perceived susceptibility was not associated with actually engaging in preparedness behaviors.

Other Predictors of Preparedness

Previous Disaster Experience

The impact of previous natural disasters has the potential to shape current disaster-related practices. Rice and Jahn (2020) state that communities and organizations commonly use past experiences to prepare for future disasters. Additionally, most scholarship in this area suggests it is important to examine the intention to prepare based on the experience one has had in previous natural disasters (Dursun et al., 2016). No two disasters are alike. Natural disasters differ from man-made disasters, and same type of disaster often differs when accounting for levels of severity and susceptibility (Dursun et al., 2016). Limited work has considered the influence of previous experience of natural disasters on current preparedness behavior. It is generally noted that in the U.S., the types of disasters where preparedness is prioritized is terrorism and traffic accidents (Carter-Pokras, et al., 2007). Interestingly, these events motivate preparedness behaviors more than previous natural disaster experience, even when considering perceived levels of threat (Viscusi, 2009). In a study of those who experienced multiple natural disasters in Queensland, Australia during the 2010-2011 summer period, Fay-Ramirez et al. (2015) found that those who perceived their community to be disorganized before the disaster were less likely to provide aid or contribute to recovery efforts. More specifically, those who had lower perceptions of their neighbor's ability to react to a natural disaster were less likely to engage with others.

Gender

Disaster preparedness research generally examines demographic variables associated with the behavior, and there are several consistent findings, especially regarding gender. It is often found that gender serves as a weak predictor of perception of threat, as well as a predictor of intention to prepare. DeBastiani et al. (2015) found that women were less likely to have emergency supply kits prepared in their homes compared to men. Relatedly, Tkachuck (2016) found that women generally reported higher levels of perceived threat, and reported a lower number of disasters experienced across the lifespan compared to men. Overall, Kohn and colleagues' (2012) meta-analysis revealed that men were more likely to have emergency supplies prepared than women. These gender differences may be because men have generally reported being more active in emergency planning processes than women (Ashraf & Azad, 2015).

Age

The demographic factor of age can also have an impact on disaster preparedness. Older adults (defined as ages 65 and older) are generally considered to be one of the most vulnerable populations during a natural disaster (Stough & Kelman, 2018). According to 2016 population estimates, 15.24% of the U.S. population is age 65 years and older (U.S. Census Bureau, 2017), and by 2030, one in every five U.S. residents will be retirement age (U.S. Census Bureau, 2018b). According to the U.S. Department of Health and Human Services (2013), age is associated with functional activity; as adults grow older, they are more likely to need assistance with their personal needs, as well as report needing help in understanding information about natural disasters (Mayhorn, 2005). This highlights the importance of carefully understanding disaster preparations aimed at older adults. However, the literature on this population suggests that preparedness activities and

interactions are not always prioritized (Bethel et al., 2011). Older adults are more likely to have health-related issues (for example, in 2017, 35.2% of those 65 or older in the U.S. indicated having a disability that affected their daily life; Kraus et al., 2018). Those with fair to poor health were less likely to have an emergency supply kit (Bethel et al., 2011), and less likely to have emergency communication plans (Eisenman et al., 2009). This literature suggests that this population should be studied regarding how to best motivate disaster preparedness (Stephens, 2020).

Unfortunately, natural disasters have the potential to cause new disabilities, to negatively affect current impairments in older adults, and to decrease the mobility of those with pre-existing health conditions (Stough & Kelman, 2018). "Emergency situations such as conflicts or natural disasters can also generate an increased number of people who experience disability owing to new injuries, a lack of quality medical care, or the collapse of essential services" (Handicap International, 2015, p. 5). In the context of disaster preparedness, Ashida et al. (2016) argued that "older adults in rural areas [in particular] are at increased risk for adverse outcomes of disasters, partly due to medical needs, limited or long geographic distances from community resources, and less knowledge and motivation about preparedness steps" (p. 2117). In response to this risk, these researchers created a behavioral intervention targeted toward older adults in rural communities. However, despite the fact that gathering and preparing emergency supplies is a non-complex thinking task, many older adults in their study had low motivation to engage in the recommended behavior of gathering supplies.

EXPANDING UPON EPPM FOR DISASTER PREPAREDNESS

Taking action before a natural disaster not only has the potential to save lives for those who prepare but can also foster a sense of community. Putnam (2000) states that

"connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from [disasters]" can create a sense of community (p. 19). Stephens et al. (2004) stress that connections to others and to community groups positively affect health outcomes and invoke stronger communities. In the same study, Stephens et al. (2004) explain that the higher the number of community organizations an individual claims membership in, the more likely it is that health information sharing will take place. This, in turn, can lead to a recommended health outcome being performed. Thus, enlisting the support of community can expand the reach of health promotion messages such as disaster preparedness.

Following in line with Buzzanell's (2010, 2017, 2018) communication theory of resilience, preparedness can involve: crafting a sense of normalcy, affirming identity anchors, maintaining and using communication networks, putting alternative logics to work, and utilizing varying emotions for varying purposes (Robertson & Stephens, 2019). Although Buzzanell's communication theory of resilience tends to be guided by the bounce-back approach that generally takes places after a disaster, Carlson (2018) attempted to change this pattern in her study of the 2010 Kalamazoo River oil spill by explaining how a focus on preparedness is more productive for meso-levels resilience. As Bean (2018) laments, "Communication research regarding the concept of national resilience has not kept pace with its growing invocation within national preparedness strategy and discourse" (p. 23). Given the prevalence of natural disasters in our society, it makes sense that preparedness should be at the forefront of resilience-related studies and practices. Resilience is not solely about bouncing back, it is also about moving forward and taking caution for the future.

Expanding our Knowledge of Older Adults

For an aging population, understanding how resilience can be enacted is essential (Beck & Socha, 2015; Ong et al., 2009). One way resilience is fostered among older adults is through a sense of community (Paton & Johnston, 2001, 2017). In terms of social connections among the older adults, social relationships are considered biomarkers of health (Baldassare, 1984; Umberson et al., 2010), and the National Institute on Aging (2019) suggests a positive correlation between social interactions and health for older adults. In fact, one specific location in which community relationships flourish for older adults is within independent and assisted living communities. Independent living and assisted living facilities are locations in which engagement and organizing takes place among older adults (Park et al., 2012). In particular, those who participate in activities and engage in social relations as they get older are more likely to report higher life satisfaction, thus contributing to their good health. Park and colleagues (2012) found that "residents' opportunities for meaningful social relationships" were affected by organizational structures, including resources, size, and number of residents in the retirement community (p. 214). Controlling for disability, an older adult's social connectedness in an assisted living facility, in turn, provides a fuller life and a sense of well-being (Park, 2009). Thus, embedding community within health models may be essential for properly understanding positive health outcomes, like disaster preparedness.

Older Adult Living Communities

It is estimated that 2.4% of older adults live in some sort of independent living housing, while 3.1% live in skilled nursing facilities (West et al., 2014). One specific type of living community extensively studied in the literature is the Continuing Care Retirement Community (CCRC; Shippee, 2009). CCRCs allow residents to live in the same

community, while shifting between varying levels of care (moving between independent living, assisted living, and skilled nursing) as their needs require (Matthews, 2002). Perhaps the most attractive component of a CCRC is that older adults can live in these communities in various housing types: a single-family home, apartment, or condominium (SeniorLiving, 2019). This allows older adults to live self-sufficiently if they want to or can, bolstering higher level of independence, as well as improving quality of life (Shippee, 2009). As one's health changes over time, care is there for residents. The ability to move between levels of care is available as residents' needs change.

CCRCs allow older adults to live within the same retirement community throughout their later life. This permits older adults to stay comfortable and familiar with their neighbors, surroundings, amenities, and services. In this way, they can preserve their quality of life, interactions, and engagements with their community (Heisler et al., 2004). More often, CCRCs provide residents an array of luxury recreational and physical activities within the retirement community (Hurley & Brewer, 1991). These amenities are designed to encourage engagement and participation, regardless of a resident's level of physical functioning (Jenkins et al., 2002). Further, in Jenkins and colleagues' (2002) study, community engagement among residents of a CCRC was associated with higher reported quality of life.

Unfortunately, most facilities for older adults are ill-equipped to handle natural disasters. (Hagen, 2007). In Hagen's (2007) study, 91% of health professionals and other providers within older adult facilities felt ill-prepared to deal with public health emergencies and bioterrorism threats. This was one of the noted vulnerabilities for older adults who experienced Hurricane Katrina in 2005: infrastructure of these communities could not withstand the disaster (Baker, 2014; Durant Jr., 2011). Thus, Hagen (2007) suggests that residents in older adult facilities, as well as employees, caretakers, and other

loved ones, must engage in intensive planning and preparation to protect this at-risk population.

Engaging in preparedness behaviors may help prevent further health issues for older adults. While most, if not all, facilities for older adults have disaster plans in place beforehand (often governed by state, county or city laws; Fox et al., 2007), these plans vary based on levels of care (e.g., hospice patient versus those who live independently) and are not always applicable to every resident's needs (Castro et al., 2008). These plans often lump resident's needs together without considering them as individuals, and place focus on the physical components of transporting residents, such as logistics of an evacuation, and how to secure basic emergency supplies (Eisenman et al., 2007). Yet a report issued by the U.S. Department of Health and Human Services (2006) found that frail older adults living in the Gulf Coast states who were evacuated from their facility experienced several adverse health effects, including depression, dehydration, and skin tears after Hurricane Katrina, compared to residents who sheltered in place. According to Claver et al. (2013), adapting disaster preparedness plans to consider individual residents' needs that depict them as susceptible to natural disasters is crucial: "A 'one-size-fits-all' approach to disaster planning is not likely to be adequate for any population with extensive biopsychosocial needs. Disaster plans must meet the specific needs of vulnerable populations" (p. 210).

Even though these facilities will likely have emergency supplies on hand (Rein, 2013), Benson and Aldrich (2007) suggest that older adults maintain their own supply kit customized for individual needs. Despite the fact that many older adults perceive their facility will have the necessary emergency supplies on hand (Kohn et al., 2012), Banks (2013) suggests that, "Like all citizens, older adults living independently [should] be encouraged to prepare for disasters" on their own (p. 13). In addition to the recommended 72 hours' worth of supplies suggested by the American Red Cross (2020), this

customization often includes gathering all prescriptions, as well as maintaining an up-to-date list of these medications (Cohen & Mulvaney, 2005). Given the suggestion by Banks (2013), it seems that older adults who have the capability to prepare should attempt to gather necessary supplies independent of preparations made by their facility.

Addressing the Role of Community within EPPM

While the bulk of EPPM research has used self-efficacy as the determinant marker of efficacy in the model, past research suggests that there could be a more collective form of efficacy, beyond self-efficacy, that could affect preparedness in particular. Previous research has shown that perceptions of community are one of the strongest predictors of health behaviors (Parker et al., 2001; Dutta-Bergman, 2004; Stephens et al., 2004). Thus, a link between community and efficacy is relevant to this idea.

Bandura (1984, 1986) suggests that a collective form of efficacy represents the perception of a group's ability to meet situational demands through several specific methods, including how to coordinate resources, solve problems, and set goals for the future. In his work on collective-efficacy in an academic setting, Bandura (1993) discovered that a stronger sense of collective-efficacy among teachers was positively related to student performance. He suggested that the perception of a group's ability to reach a goal encompasses a collective effort that may not be possible on an individual level. However, Sampson and colleagues (1997) specified that "collective-efficacy" and "community-efficacy" are different constructs. Community-efficacy involves trust, interactions, and identification with one's community and neighbors, while collective efficacy represents a "sense of collective competence shared" among individuals who may or may not identify with others (Zaccaro et al., 1995, p. 309).

In a study on fear appeals, Smith and colleagues (2007) have also suggested that in order to heighten intention to perform a recommended behavior, the perception of others' attitudes and behaviors should be considered. Smith et al. (2007) used the context of individuals affected by HIV/AIDS in Namibia to understand collective-efficacy efforts. They reasoned that even if an individual perceives high self-efficacy, the collective influence may encourage or discourage community dialogue and action about the willingness to help others diagnosed with HIV. Initial results indicated that individuals with higher perceptions of collective-efficacy were more likely to believe others would assist those who needed help. Therefore, this research expands upon the notion of community to introduce community-efficacy into the components of perceived efficacy within EPPM.

There have been several recent attempts to infuse community within risk and organizational communication (see Barbour et al., 2020; Doerfel, 2016; Heath & Lee, 2016; Heath et al., 2018; Houston, 2018; Stephens & Boettner, 2020). Heath and Lee (2016) state that "residents in communities with fully functioning risk communication infrastructures are likely to respond to risks as manageable uncertainties (i.e., dread rather than fear) based on relationships" that exist among community members (p. 1109). However, optimal preparedness efforts differ based on community needs, level of trust between community members, and how community members engage with one another. In the wake of disaster, communities and organizations will be stronger if individuals are prepared to help themselves, their families, and their employees. Doerfel (2016) states that, "When disaster hits, resilience is challenged from individual-to-community-levels, and the very organizations that work together to support public health initiatives are also tested in terms of their own resilience" (p. 365). As suggested by Roberto et al. (2009), one's perception of others may play a vital part in fostering constructive, adaptive responses to

health threats, as well as expand the theoretical scope of models, like EPPM, by including a collective component.

These same social connections can be invoked to encourage people to share preparedness information, and this, in turn, can build community resilience. Spialek and Houston (2019) define "community resilience as a 'collective activity in which individuals join together' (Pfefferbaum & Klomp, 2013, p. 279) to address a shared challenge or crisis" (p. 4). These processes help foster a sense of community and resilience simultaneously. Pfefferbaum et al.'s (2015) theorizing on community resilience identified two domains relevant to practices important for building resilience in older adults: "disaster management" and "information and communication" (Cohen et al., 2016). Disaster management highlights the desire and ability of one's community to provide assistance regarding each natural disaster phase, while information and communication identifies how communities share information about disasters. For this dissertation, I build from Spialek and Houston's (2019) definition of community resilience, as well as Witte's (1992) conception of efficacy, to incorporate the concept of community-efficacy into the perceived efficacy components of EPPM. I define community-efficacy as an individual's belief in his or her community's ability to perform a recommended outcome.

Houston et al. (2014) note the added benefit of preparedness in intrinsically invoking community resilience: "The benefit of such serendipitous information-based connections is that the connections, if reoccurring or maintained, may also lead to improved social capital and social connections in a community, which is likely to improve overall levels of community resilience" (p. 8). This idea is echoed in other preparedness work on social connections in which higher amounts of social connections were found to increase preparedness behaviors for floods (Linnekamp et al. 2011), terrorism (Hausman et al., 2007), and wildfires (Bihari & Ryan, 2012; Stephens & Boettner, 2020).

Spialek and colleagues (2016) found that the frequency of disaster communication after a series of tornados influenced perceptions of community resilience. Particularly, those who used social media platforms and communicated with others in their community post-disaster perceived their community as more connected and caring. Moreover, individuals who used social media platforms for disaster information seeking post-disaster or talked about the disaster with religious or health professionals felt their community was resilient. Furthermore, while these interactions influenced perceptions of community resilience after the storm, they were not specifically focused on pre-event disaster communication or preparedness processes. This highlights the need to integrate preparedness as part of how communities become resilient. When individuals are prepared, they inspire others and become resilient in the process (Houston, 2018). In later work, Spialek and Houston (2018) developed and validated the Citizen Disaster Communication Assessment (CDCA), which includes several "pre-event" activities and interactions. In their conceptualization, Spialek and Houston (2018) state that "pre-event" interactions include communication based on problem-focused coping, such as building an emergency supply kit or creating an emergency communication and evacuation plan. This scholarship further justifies the need to continue empirical work on disaster preparedness communication.

Sadly, individuals often view disaster-related behaviors as individual responsibilities that are considered unrelated to their community. Spialek and Houston (2019) suggest that it is important to create focused efforts such as large-scale community mock drills that "help residents bolster collective-efficacy and develop a shared understanding of risk and preparedness needs" (p. 16). Yet despite concerted efforts, Spialek and Houston (2019) state that there is still a disconnect between disaster communication and collective perceptions before disaster strikes. Given this gap, this

proposed study embeds community as an important addition when using the perceived efficacy component of EPPM for understanding disaster preparedness.

The Inclusion of Community-Efficacy

I have built on prior notions of self-efficacy to introduce the concept of community-efficacy into the components of perceived efficacy within EPPM. The idea of community integrated into risk communication models is not unprecedented. Heath and Lee (2016) found that trusting others in the community was important for community members to respond appropriately to emergency information. The definition of community-efficacy used for this study—an individual's belief in his or her community's ability to perform the recommended outcome—is extended from Witte's (1992) initial conceptualization of efficacy in the original EPPM model. Given the multifaceted role of community in natural disasters, these perceptions of collective efforts (including thinking about how one's community engages in a behavior) may invoke how preparedness behaviors are manifested. Perceptions of how communities and neighbors engage in health-related behaviors is important in the disaster context (Heath & Lee, 2016).

I conceptualize community-efficacy as different than response-efficacy and self-efficacy. The efficacy variables in EPPM represent an individual's perceptions concerning their own ability to perform the recommended response. However, given the vast literature supporting the notion that communities are able to draw upon shared resources in disasters (Chewning et al., 2013; Doerfel, 2016), it makes sense to consider the role of community as a separate variable within EPPM. As Doerfel (2016) states, "Communities create the necessary stable backdrop for individuals to retain their own resilience and health" (p. 3). Given this extension of EPPM and the role of community and resilience in natural disasters, the following hypotheses and research questions are proposed:

H1a: Community-efficacy is positively related to the intention to prepare for natural disasters.

H1b: Self-efficacy is positively related to the intention to prepare for natural disasters.

RQ1a: To what extent does the community resilience domain of disaster management moderate the relationship between community-efficacy and the intention to prepare for natural disasters?

RQ1b: To what extent does the community resilience domain of information and communication moderate the relationship between community-efficacy and the intention to prepare for natural disasters?

I suggest that perceptions of how resilient one's community is may act as a moderating variable between community-efficacy and disaster preparedness. Using the relevant community resilience domains of disaster management and information and communication, a moderation tests the influence of a third variable (disaster management, and information and communication) on the relationship between community-efficacy to disaster preparedness. This moderation considers how this third variable (community resilience) affects the direction and strength of the relationship between the independent and dependent variable (Blair, 2019). People may be more likely to prepare for natural disasters when they believe others in their community can prepare (community-efficacy). However, this relationship can change when individuals consider how resilient they perceive their community to be. Carlson (2018) states that people "could be united by their shared vulnerability and a renewed awareness of their interdependence" (p. 215).

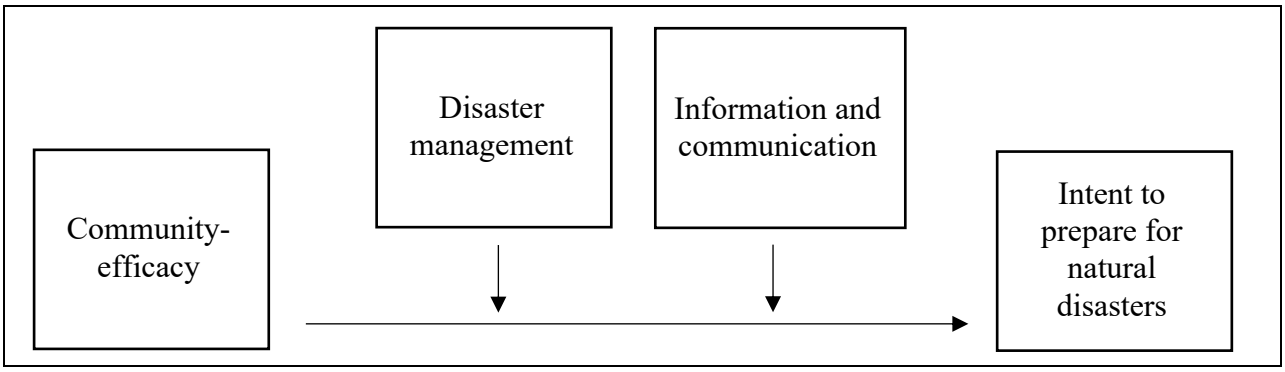

Figure 2.2. Community Resilience Domains of (A) Disaster Management and (B) Information and Communication Moderating the Relationship Between Community-Efficacy and the Intent to Prepare.

Table 2.1 details each of the constructs embedded within the extended version of EPPM used for this study. New items are placed in bold text.

Table 2.1. Definitions of Threat and Efficacy Components from EPPM

Threat and Efficacy Components from EPPM	Definition
Severity	A person's belief about the significance or magnitude of a specified health threat
Susceptibility	A person's belief about his or her chances of experiencing a specified health threat
Response-efficacy	A person's belief about the effectiveness of a recommended action to avert or lessen a specified health threat

Table 2.1, continued

Self-efficacy	A person's confidence in his or her ability to perform a specific recommended action
Community-efficacy	**A person's belief in his or her community's ability to perform a specific recommended action**

Community Identification

Identification indicates a person's feeling of agreement with some larger collective. It signifies the building, preservation, and modification of associations between individuals and those collectives as agreement is experienced (Scott et al., 1998). Communities and neighborhoods can serve as collectives that provide targeted avenues of identification. In Glynn's (1986) work, those who had a "sense of community, community satisfaction, and community competence were significantly more likely" to think of their neighbors as part of their community (p. 341). In Glynn's study, satisfaction was operationalized as the "current level of satisfaction with life in the community" (e.g., "I feel I belong here"), while community competence was operationalized as the "ability to function competently in the community" (e.g., I know "how to register to vote in local elections;" Glynn, 1986, p. 345). Glynn's (1986) findings suggest that our sense of community has changed. "Though the neighborhood may no longer be the hub around which sense of community revolves, it does appear to be a significant contributor to the sense of community that we do feel" (Glynn, 1986, p. 350).

LaLone (2012) also discusses the importance of community identification as part of the preparedness process. "Planning for community resilience to [natural] disasters needs to give greater consideration to the potentials for response and recovery contributions

available" from neighbor-based connections (LaLone, 2012, p. 209). Communication-based activities between community members and neighbors bring forth the idea of how identity can be manifested through interactions (Scott & Stephens, 2009; Stephens & Boettner, 2020). Agarwal and Buzzanell (2015) state that resilience can be sustained through the identification with one's family and community members. In a recent project understanding how neighbors participate in disaster preparedness behaviors, Stephens and Boettner (2020) found that residents who felt a strong sense of identification, as well as those who were also more involved in the neighborhood events, were more likely to participate in a mock emergency-drill. Given that preparedness is a communication-based activity with the potential to inspire others to become resilient in the process (Houston, 2012, 2018; Stephens & Boettner, 2020), further investigation of community should take place in the disaster context.

I posit that that community identification moderates the relationship between community-efficacy and disaster preparedness. This moderation tests the influence of community identification on the relationship between community-efficacy to disaster preparedness. People may be more likely to perform a certain behavior when they feel others in their community can as well (community-efficacy). However, this relationship can change when individuals think about how they identify with that same community (Scott & Stephens, 2009). Individuals with a low sense of identification with their community may not engage in the recommended behavior, regardless of perceptions of community-efficacy. In contrast, individuals who perceive a high sense of identification with their community may be more likely to follow the recommended behavior, regardless of community-efficacy. Individuals who believe a recommended behavior will be effective in deterring a threat are more likely to follow the behavior when they believe others around them have a strong ability to do so. Thus, the following research question is posed:

RQ2: To what extent does community identification moderate the relationship between community-efficacy and the intention to prepare for natural disasters?

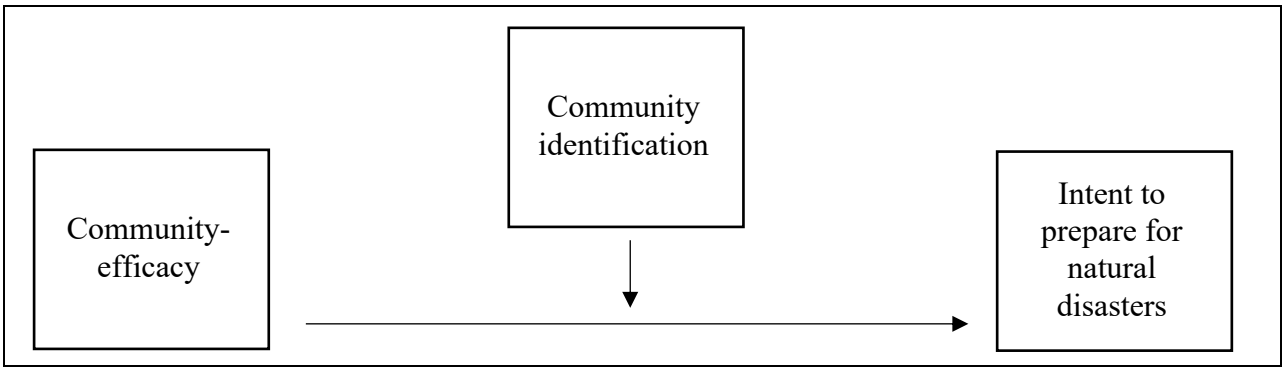

Figure 2.3. Community Identification Moderating the Relationship Between Community-Efficacy and the Intent to Prepare.

Bandura (2006) argues that domain-specific efficacy is more important to any specific behavior than global efficacy. He rationalized that we cannot do everything well but, rather, selectively develop efficacy in particular areas. Because of this domain-specific efficacy, it may be useful examine differences in preparedness when considering experience with multiple natural disasters (Dursun et al., 2016). Sattler and colleagues (1995) noted that the experience of a natural disaster increases the likelihood that community members would volunteer to provide aid during the recovery period. Older adults with more natural disaster experience also indicated a significantly increased intention to follow voluntary evacuation orders requested by local emergency management organizations (Bonnan-White, 2017). Given this, the following research question is proposed:

RQ3a: What is the relationship between natural disaster experience and community-efficacy?

RQ3b: What is the relationship between natural disaster experience and self-efficacy?

Because the experience of past disasters may affect preparedness, as well as the interactions with others that can take place pre-disaster, the following hypotheses and research question are proposed:

H2: Natural disaster experience positively predicts the intention to prepare for natural disasters.

RQ4a: What is the relationship between pre-event disaster communication and community-efficacy?

RQ4b: What is the relationship between pre-event disaster communication and self-efficacy?

Some of the most common barriers reported for not gathering emergency supplies or creating an emergency supply kit include confusion on how to plan for the unknown, inability to buy supplies, and thinking natural disasters are not important in one's region (Bader et al., 2020; Kruger et al., 2018). For older adults in skilled nursing facilities generally, the lack of emergency supplies during a natural disaster can create health problems for residents (U.S. Department of Health and Human Services, 2006), as well as for health care providers (Laditka et al., 2009). Ladikta and colleagues studied emergency preparedness efforts during Hurricane Katrina and stated that "A major problem [during that disaster] was not having enough supplies. There were incontinent residents who needed pads and wipes" (p. 60). Given the need for older adults in CCRCs to maintain their own supply kit customized for their needs, it is worth understanding the impact that pre-event disaster communication can have on participating in preparedness behaviors.

H3: Pre-event disaster communication positively predicts current household preparedness.

H4: Pre-event disaster communication positively predicts the intention to prepare for natural disasters.

With myriad research suggesting that older adults are extremely vulnerable to natural disasters and that they process messages about disasters differently, the older adult context may be suitable to apply EPPM in the disaster environment. Price and colleagues (2011) used EPPM in a study to promote physical activity among older adults with cognitive impairments. These researchers found that if participants did not believe cognitive decline was severe or did not feel susceptible to the effects of cognitive decline, they rejected messages promoting a recommended behavior: being physically active. If participants felt threatened by cognitive decline but did not feel that engaging in the recommended behavior could prevent cognitive decline or were not confident in their ability to participate in physical activity, they focused on managing their fear by rejecting or evading the message altogether.

In the disaster context, because many older adults do not believe engaging in the behavior (e.g., preparing the necessary emergency supplies in the household; Ashida et al., 2016) will be effective (response-efficacy), it would be useful to examine how this variable affects both community-efficacy and self-efficacy. Response-efficacy may moderate the relationship between both community-efficacy and self-efficacy. This moderation tests the influence of response-efficacy on the relationship between (a) community-efficacy and (b) self-efficacy and the intention to prepare.

Generally, people choose to follow a recommended behavior when they believe they can do so (Bandura, 1982). However, this relationship has potential to change when individuals consider how effective the behavior will be, if followed, in achieving a specific goal. Specifically, individuals who perceive response-efficacy to be low may choose not to engage in the recommended behavior, even though they may feel that they are capable

of doing so (e.g., preparing emergency supplies). Conversely, individuals who believe a recommended behavior will be effective to deter threats are more likely to follow the behavior when they believe they have a strong ability to do so. In a study on health risk perceptions among people living in poverty, Freimuth and Hovick (2012) found that following a recommended healthy behavior was dependent on one's level of response-efficacy, and specifically individuals with low response-efficacy were still likely to follow the recommended behavior. Choi et al. (2013) suggest that it is theoretically important to understand these nuanced differences in terms of efficacy. Thus, the following research question is posed:

RQ5a: To what extent does response-efficacy moderate the relationship between community-efficacy and the intention to prepare for natural disasters?

RQ5b: To what extent does response-efficacy moderate the relationship between self-efficacy and the intention to prepare for natural disasters?

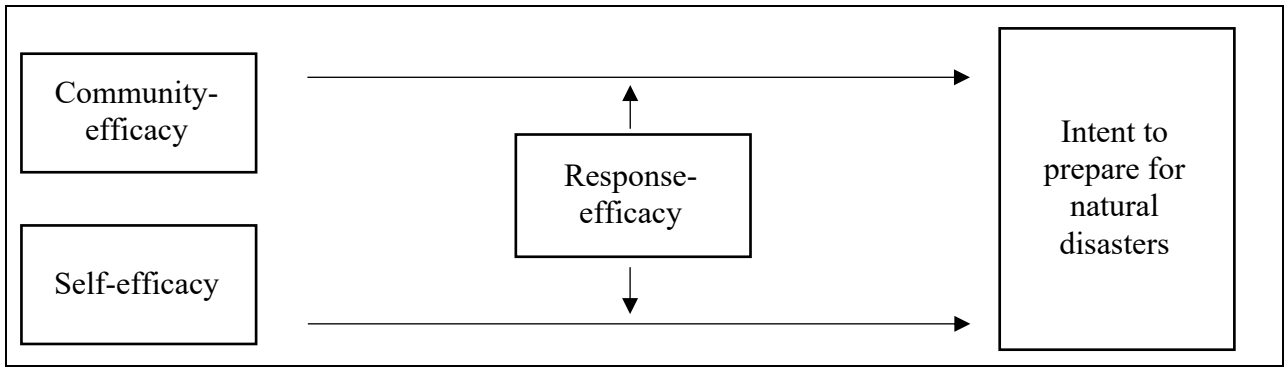

Figure 2.4. Response-Efficacy Moderating the Relationship Between (A) Community-Efficacy and (B) Self-Efficacy and the Intent to Prepare.

In Stephens' (2020) call to action, she suggests that older adults' special considerations in natural disasters should be theoretically prioritized. I use her rationale, as

well as several other study that have extended EPPM (Carcioppolo, 2008; Johnson, 2019; Lok, 2019; Sharp, 2005; So, 2013) to create my sixth research question:

RQ6: How well do the constructs of EPPM's extension of perceived threat and efficacy (Table 2.1) predict older adults' intention to prepare for natural disasters?

In order to determine whether older adults experience a fear control or danger control response to natural disasters, Witte (1998) suggests it is worthwhile to calculate the discriminating value between one's perceived threat and perceived efficacy. Witte et al. (1996) explain that the critical point is a key component of EPPM:

> The critical point is a key concept in the EPPM. The critical point occurs when perceptions of threat begin to outweigh perceptions of efficacy, causing people to shift from danger control to fear control processes. Thus, the point at which people begin to believe they are unable to effectively avert a significant and relevant threat from occurring is the critical point, at which time people give up controlling the danger and turn instead to controlling their fear. (p. 321).

Although the critical point's exact numerical value varies across context, it is "possible to use a simple mathematical formula to discriminate between people engaging in danger control processes and people engaging in fear control processes" (Witte et al., 2001, p. 72). This calculated value can determine how individuals may act when they experience stimuli related to components of the model. Basil and Witte (2012) state that determining this difference between threat and efficacy allows specification as to what factors need to be induced when designing effective messages intended for the target population. Although this research will not test the effects of messages using EPPM, it may be useful to incorporate community-efficacy into the formula to understand if the inclusion of community-efficacy produces a discriminating value that will invoke a fear control or danger control response. Therefore, the seventh research question asks:

RQ7: Will the inclusion of community-efficacy invoke a fear control or danger control response in older adults?

CHAPTER SUMMARY

This extension of EPPM describes both the individual and community level constructs necessary to understand disaster preparedness among older adults. Throughout this review, I speculate that the constructs of the proposed extension of EPPM may be useful at predicting older adults' intention to prepare for natural disasters. Given the role of community resilience during natural disasters, as well as the beneficial impact of community within the gerontology literature, this extension of EPPM seems like a logical choice to extend our understanding of how the older adult population engages in disaster preparedness.

Chapter 3: Methods

STUDY OVERVIEW

To address the hypotheses and research questions proposed in this study, I collected quantitative survey data. There are many reasons for relying exclusively on quantitative methods to answer the hypotheses and research questions. First, the questions of interest should always guide social science research methods (Weathington et al., 2010). The research questions and hypotheses proposed in this study are concerned with measuring the community- and individual-level variables on the components of perceived efficacy (see Table 2.1 for definitions of these concepts). For instance, one research question asks about the ability of the adapted components of threat and efficacy to explain how well these constructs work toward predicting older adults' intentions to engage in disaster preparedness behaviors. Other research questions consider the effect of moderating variables on the intention to prepare.

Second, surveys are viewed as the most appropriate social scientific research method when sampling older adult populations (Jobe & Mingay, 1990). Despite increasing Internet use and availability among older adults (Query Jr. & Wright, 2003; Tak et al., 2007), Internet access was not guaranteed during the time of data collection at the two continuing care retirement communities (CCRC) facilities. The gold standard in most gerontology research among older adults is the use of paper surveys for data collection (Schilling & Gerhardus, 2017). One possible reason for this is that older adults have less experience using computers, resulting in added stress on their processing capacity when they complete self-report measures using technology (Dickinson et al., 2007). In Weigold and colleagues' (2016) work, they found that older adults who used paper and pencil to complete a survey had greater levels of comfort, as compared to a computerized version.

Many older adults prefer a survey instrument with closed-ended questions using paper and pencil (Schilling & Gerhardus, 2017). I collected this survey data in person at two research sites.

Finally, the purpose of this study is to adapt EPPM to a community disaster preparedness context. Because many of the previous tests of EPPM have used quantitative methods (see de Hoog et al., 2007; Popova, 2012; Witte & Allen, 2000 for meta-analyses and systematic reviews of EPPM), and several specifically used hierarchical multiple regression (Carcioppolo, 2008; Ooms et al., 2015), this study contributes to the larger body of work by replicating and extending other scholars' methodology. Using hierarchical multiple regression over structural equation modeling (SEM) is appropriate to answer this study's hypotheses and research questions for several reasons. First, SEM is largely a confirmatory, rather than an exploratory, technique (Dattalo, 2013). Insights about how the addition of how community-efficacy might fit as a perceived efficacy component to the model will be enhanced by exploring the additional explanatory, predictive power of a new variable using multiple regression. Second, SEM generally requires a minimum of four items per scale in order to test the homogeneity of items within each latent construct (Harvey et al., 1985). Because this dissertation employs the Risk Behavior Diagnostic (RBD) index (Witte et al., 1996), which uses only three items per scale, SEM may be viewed as not appropriate. Third, the control variables (gender and disability status) in this study are binary variables, which makes them less suitable for SEM, which is sensitive for deviations of multinormality (Hair Jr. et al., 1995). Finally, the hypotheses and research questions proposed in this study examine elements of EPPM discreetly—not testing the entire theory nor including all variables related to threat and efficacy in every regression model. Previous research has suggested that isolating variables within EPPM allows for a nuanced understanding of unexplored relationships between the constructs (Barnes, 2016).

This chapter describes the research site, participants, data collection details, as well as the operational details of each variable and demographic information.

RESEARCH SITES

The data for this study were collected at two CCRC facilities: one in Orange County, California, and the other in Central Texas. CCRC facilities are a type of retirement community where a range of aging care needs—from independent living, assisted living, and skilled nursing care—can all be met within the same community (Matthews, 2002). By collecting data at two research sites, cross-sectional comparisons can be drawn from these two regions.

The location in Orange County, California was chosen in light of the U.S. Census Bureau's (2018a) statement that coastline communities are especially at-risk during natural disasters. The city where this CCRC is located has approximately 140,000 residents, 13% over the age of 65 (U.S. Census Bureau, 2020). Perched atop a hill in one of the city's most affluent neighborhoods, the CCRC offers resort-style living for adults of all levels of care. This community has 131 units across three levels, with 205 current residents (as of September 2019). It is in close proximity to established retail, restaurant, and recreational areas, as well as the city Senior Center. The owner of this community is a property management organization that owns four additional retirement communities in Orange County, California, as well as others across California, Arizona, Colorado and Washington. The most common natural disasters experienced in this region include earthquakes, wildfires, mudslides, and flooding (ReadyOC, 2020).

The location in Central Texas was selected due to proximity to the researcher, and although this community is not on a coast, it has experienced several natural disasters over the last several years. The city where this CCRC is located has a population of

approximately 950,000 residents, 8.7% over the age of 65 (U.S. Census Bureau, 2020). Close to a local river and walking distance to nearby retail, restaurants and medical services, this community offers luxury amenities and accommodations in the form of a resort lifestyle. This community has 126 units across five floors, and 208 residents (as of December 2019). The owner of this community is an organization that specializes in senior living property management, and manages a portfolio of properties across Texas, Arkansas, and Oklahoma. The most common natural disasters experienced in this region include flooding, tornados, and wildfires (Travis County, TX, 2020).

These two communities are ideal data collection sites to address the research questions and hypotheses proposed in this study because both regions experience natural disasters. These communities also share similarities, given the fact they are both privately owned, for-profit CCRCs. Previous communication research on retirement communities that contain aged-care services have considered them to be customer-service organizations (Simpson & Cheney, 2007), as residents pay for high-quality services and the owner is responsible to corporate investors or shareholders. By situating this research within two customer-service organizations, this research expands the type of organization represented in the literature—specifically, for-profit CCRCs.

In organizational communication research, it is generally common and acceptable to collect data at multiple sites of research using the same research protocol (Orlikowski & Scott, 2014). Further, because only one of the variables measured significantly differed between the communities (natural disaster experience score, $t^{233} = 5.88$, $p < .01$), this dissertation combined data from both research sites in the results. I provide more detailed explanation of regional disaster experience in the discussion.

PARTICIPANTS

The participants learned about this study through gatekeepers and fellow community residents. At the Orange County, California location, I met with a Resident Coordinator and Resident Liaison in June 2019 to discuss the project in more detail. In August 2019, I received approval for data collection from the organization and determined the procedure for collecting the survey data. The organization allowed me to collect data the first Saturday of the month in both September and October 2019. Following this specific organizational commitment, I received IRB approval from The University of Texas at Austin to carry out the study. At the Central Texas location, I met with the Director of Sales and Marketing in July 2019 to discuss the goals of the project. In September 2019, I received approval for data collection from the organization and determined when data collection would commence. The organization allowed me access to collect data at various time points from October to December 2019. Data collection concluded on December 14, 2019.

Participation in the study was voluntary, and no identifying information was collected, ensuring that the data remained anonymous. I worked with The University of Texas at Austin IRB to ensure ethical data collection, including criteria for participation. Participants in this study were required to be (a) age 65 or older, (b) a resident of the community, (c) not needing a legally authorized representative, and (d) not cognitively impaired to the extent of influencing decisional capacity. Participants indicated with a verbal "yes" if they met the criteria and agreed to participate after reading the consent form. All participants had to be proficient in English. Although I was prepared to offer an English and a Spanish version of the survey, my key organizational contacts at both sites informed me that only the English survey was necessary.

In total, 282 participants were recruited through voluntary sampling methods across both communities to take the paper survey, but only 234 completed the survey. My goal in data collection was to recruit participants during nonintrusive recreational hours permitted by the gatekeepers. However, both communities invited me to meet with residents in the days before collection commenced. During this period, I was able to inform residents of my study and where I would be located during data collection. At the Orange County site, I was invited by several residents to enjoy dinner with them in the dining room, and spent several hours learning about the lifestyle of a CCRC. Many of these informal conversations were audio recorded with the consent of participants, and used as background information to inform the discussion section of this study.

The ideal sample size for this research was n = 300. The recommendation for studies employing hierarchical multiple regression is 30 respondents per each independent and control variable (Wilson VanVoorhis & Morgan, 2007). The ideal sample size was calculated based on a total of ten independent and control variables, with approximately 30 participants per variable needed as a minimum. However, research on the recruitment of older adults for survey research suggests that smaller sample sizes can be acceptable, given that survey mortality may be more likely as a research progression effect in working with older adults (Mody et al., 2008).

DATA COLLECTION PROCEDURES

Paper surveys were used for both research sites, and I was on site during every data collection period to administer surveys and respond to participant questions. The survey was printed using a 14-point, sans serif font on single-sided pages. These considerations were inspired by suggestions from the U. S. Office of Disease Prevention and Health Promotion (2016) about health literacy for older adults. Returned paper surveys were stored

in a locked cabinet. Participants were first given a paper informed consent form. By stating "Yes" out loud, they confirmed their intention to participate in the research. Below, I describe the protocol I used to construct my survey and analyze the data. The consent form is located in Appendix A.

The survey took between 10 and 25 minutes to complete, with most participants completing the survey in 12 minutes. The survey consisted of 45 Likert-type items, 21 check-list items ("Yes" or "No"), and demographic questions. 234 surveys were completed out of the 282 distributed, making the dropout rate 17%. Although I did not reach the ideal number participants for this study, the lower-than-expected return rate may follow in line with concerns from Murphy and colleagues (2008) that older adults can be suspicious of survey research. Their study found that older adults did not complete a survey because they felt they would be expected to return the favor to the researcher or organization. Mody et al. (2008), however, suggest that smaller samples are acceptable in the older adult context.

MEASURES

The survey asked participants multiple questions regarding their attitudes toward performing disaster preparedness. Unless otherwise noted, all measures were rated on 7-point Likert-type scales with the anchors *strongly disagree* (1) and *strongly agree* (7). Larger values for a measure indicated a greater amount of the variable. Attitudinal items were formulated based on the constructs of the EPPM (severity, susceptibility, response-efficacy, self-efficacy, community-efficacy, and intention) and used items adapted from the validated Risk Behavior Diagnostic (RBD) index (Witte et al., 1996). This 12-item index is highly cited and has been used in many studies within communication (Egbert et al., 2013; Goodall & Reed, 2013; Rimal, 2001; Wong & Capella, 2009). According to Witte et al. (2001), the RBD index can be adapted to study any health threat. Scale items

were averaged to create composite variables for each EPPM construct. The following outlines the measurement of each variable in detail. All scales are reproduced in Appendix B.

Independent Variables: Components of Threat and Efficacy

Drawing from Witte et al.'s (1996) risk behavior diagnostic (RBD) index, severity, susceptibility, response-efficacy, and self-efficacy were measured using three items for each construct. To create a measure of community-efficacy, I used five items, adapted from both the RBD index and Heath and Lee's (2016) work on community.

Severity

The first component of perceived threat, severity, was measured with three items: "I believe that natural disasters are severe," "I believe that natural disasters are serious," and "I believe that natural disasters are significant to my life." Past studies using these three items in other behavioral health contexts have achieved acceptable reliabilities with α = 0.91 (Gore & Bracken, 2005). In this study, these three items were combined to create a composite measure with α = 0.71, M= 5.60, SD = 0.98, and N = 230.

Susceptibility

The second component of perceived threat, susceptibility, was measured with the following three items: "I am at risk for natural disasters," "It is likely that a natural disaster will occur in my area," and "It is possible that I will experience a natural disaster." Past studies using these three items in behavioral health studies have achieved acceptable reliabilities with α = 0.85 (Gore & Bracken, 2005). In this study the composite measure had an α = 0.84, M= 5.40, SD = 1.06, and N = 230.

Response-Efficacy

The first component of perceived efficacy, response-efficacy, was measured with the following three items: "Preparing emergency supplies in advance is effective in preventing the impact of natural disasters," "Preparing emergency supplies in advance work in preventing the impact of natural disasters," and "If I prepare supplies in advance, I am less likely to be harmed by natural disasters." Past studies using these three items in behavioral health studies have achieved acceptable reliabilities with α = 0.87 (Gore & Bracken, 2005). The reliability in this study was α = 0.70, M= 5.69, SD = 0.95, and N = 230.

Self-Efficacy

The second component of perceived efficacy, self-efficacy was measured with the following three items: "I believe I am able to prepare for natural disasters," "I believe I have the ability to prepare for natural disasters," and "I believe I can easily prepare for natural disasters." Past behavioral health studies using these three items have achieved acceptable reliabilities with α = 0.95 (Gore & Bracken, 2005). In this study, the composite measure had an α = 0.70, M= 5.30, SD = 0.83, and N = 230.

Community-Efficacy

The additional component of perceived efficacy, community-efficacy, was adapted from Witte et al.'s (1996) items on self-efficacy. These three items included: "I believe others in my community are able to prepare for natural disasters," "I believe others in my community have the ability to prepare for natural disasters," and "I believe others in my community can easily prepare for natural disasters." In creating this measure, I added two additional items, adapted from Heath and Lee's (2016) community measure. These two items were: "Safeguards are in place to prevent natural disasters from harming my

community," and "If a natural disaster would occur nearby, others in my community are prepared to respond properly."

Most of the variables in this study were operationalized using previously tested and published scales. The community-efficacy variable was constructed expressly for this study because a suitable scale did not exist. In this study, the composite measure of all five items had an $\alpha = 0.67$, $M = 4.70$, $SD = 0.83$, and $N = 230$. I conducted principal component factor analysis with the varimax rotation. Using exploratory factor analysis, three of the five items loaded onto one component, accounting for 45% of the total variance above the 0.70 threshold. These three items were: "I believe others in my community are able to prepare for natural disasters," "I believe others in my community have the ability to prepare for natural disasters," and "I believe others in my community can easily prepare for natural disasters." The composite measure for these three items had an $\alpha = 0.78$. The remaining two items loaded onto a separate component above the 0.70 threshold and accounted for 24% of the total variance. These items were: "Safeguards are in place to prevent natural disasters from harming my community" and "If a natural disaster would occur nearby, others in my community are prepared to respond properly." The composite measure for these two items had an $\alpha = 0.56$. Upon further evaluation, I deleted the remaining two items adapted by Heath and Lee (2016) from this overall scale to improve the overall fit of the construct, as well as to keep the wording of the measures in line with the RBD. With the first three items only, the composite measure had an $\alpha = 0.78$, $M = 4.92$, $SD = 1.10$, and $N = 230$.

Independent Variable: Pre-Event Disaster Communication

Prior research suggests that individual disaster communication has an important role in helping people and communities cope with the negative effects of disasters. Spialek

and Houston (2018) developed and validated the Citizen Disaster Communication Assessment (CDCA), which is a comprehensive survey instrument measuring individuals' communication across disaster phases. Specifically, the pre-event phase includes a) an assessment of one's community's risk of experiencing disasters, b) the use of disaster-related applications and technology for communication, and c) communication with others to potentially mitigate damages. Their 22-item pre-event measure has been used in past studies with strong reliabilities, including $\alpha = 0.96$ (Spialek & Houston, 2019). For the purpose of this study, only the "assessment" and "mitigation" subscales were used, as most disaster-related applications for smartphones and tablets do not consider the needs vulnerable populations and are generally targeted toward the general public rather than older adults (Zhang et al., 2020). The assessment of risk and readiness subscale focuses on communication and information-seeking strategies about risk, such as engaging in discussions within one's community about disaster-related information, while the mitigation subscale includes items about inoculating against disaster-related distress.

The following 12 items were adapted from Spialek and Houston's (2018) CDCA scale to measure pre-event disaster communication: "I've looked for information about the likelihood of a disaster occurring in my community," "I have talked to someone about what to expect if a disaster occurs," "I've looked for information about where to store a home disaster kit," "I've looked for information about what supplies to include in a home disaster kit," "I've looked for information about what to expect if a disaster occurs," "I've looked for information about how to prepare for a disaster," "I've talked with someone about the likelihood of a disaster occurring in my community," "I've talked with someone about how to prepare for a disaster," "I've talked with someone about the serious risk of a disaster," "I've talked with someone about ways to make my residence safe if a disaster occurs," "I've encouraged someone to make copies of important documents," and "I've encouraged

someone to know what to do with their pets in the event of a disaster." The composite measure had an $\alpha = 0.92$, $M = 4.54$, $SD = 1.12$, and $N = 230$.

Independent Variable: Natural Disaster Experience

Experience is defined as having been directly affected by a particular type of natural disaster at least once in one's lifetime. Modeled after Weber et al.'s (2018) measure of past disaster experience, experience was measured by response to the question, "Which of the following emergency situations have you personally experienced (i.e., you were directly affected by the experience)?" Response options included eight types of natural disasters (fire, flood, tornado, earthquake, hurricane/tsunami, ice storm/blizzard, mud slide, other, and none of the above). Responses were coded: "yes" (coded 1) or "no" (coded 0). The eight natural disaster responses were summed for an overall natural disaster experience score. These types of natural disasters were taken directly from the Federal Emergency Management Agency's (2013) list of natural hazards. At the Orange County community, the natural disaster experience score ranged from 0 to 5 natural disasters experienced with a $M = 2.02$, $SD = 1.15$, and $N = 127$. At the Central Texas community, the natural disaster experience score ranged from 0 to 5 natural disasters experienced with a $M = 1.11$, $SD = 1.08$, and $N = 103$. Combined across both communities, the natural disaster experience score ranged from 0 to 5 natural disasters experienced with a $M = 1.60$, $SD = 1.12$, and $N = 230$. Table 3.1 represents the frequencies of disaster experience for each community, and in combination.

Table 3.1. Frequencies of Natural Disaster Experience

	Orange County Community		**Central Texas Community**		**Combined**	
	Yes	No	Yes	No	Yes	No
Fire	56	71	21	82	77	153

Table 3.1, continued

Flood	22	105	35	68	57	173
Tornado	10	117	23	80	33	197
Earthquake	112	15	5	98	117	113
Hurricane/ tsunami	14	113	12	91	26	204
Ice storm/ Blizzard	12	115	11	92	23	207
Mudslide	24	103	5	98	29	201
Other	1	126	2	101	3	227
None/never experienced	9	118	7	96	16	214

Moderating Variable: Community Resilience

I suggest in this research that perceptions of how resilient one's community is may act as a moderating variable between community-efficacy and disaster preparedness. Pfefferbaum et al.'s (2015) Communities Advancing Resilience Toolkit (CART) is a highly-cited and validated index used to assess community resilience in a variety of disaster-related contexts (Pfefferbaum et al., 2016). Specifically, the CART measure includes domains relevant to the experience of living in a CCRC including disaster management, and information and communication. I used Pfefferbaum et al.'s (2015) scales measuring disaster management and information and communication, as previous studies suggest these two variables are important during the pre-event disaster period for older adults (Cohen et al., 2016). Each domain has achieved acceptable reliabilities in previous studies, including $\alpha = 0.91$ for disaster management, and $\alpha = 0.83$ for information and communication (Pfefferbaum et al., 2016).

Disaster Management

The four items used to assess disaster management include: "My community tries to prevent disasters," "My community actively prepares for future disasters," "My

community can provide emergency services during a disaster," and "My community has services and programs to help people after a disaster." The reliability in this study was α = 0.80, M = 4.83, SD = 1.07, and N = 230.

Information and Communication

To measure information and communication, the four items from the CART measure were modified for this study: "My community keeps people informed about issues that are relevant to them," "If a disaster occurs, my community provides information about what to do," "I get information through my community to help manage disasters," and "People in my community trust each other." The reliability in this study was α = 0.71, M = 4.84, SD = 1.09, and N = 230.

Moderating Variable: Community Identification

As posited in this research, community identification may act as a moderating variable in the relationship between community-efficacy and disaster preparedness. Drawing from Scott and Stephens' (2009) situated organizational identification measures, I modified this scale to reflect the community context. The five items to address community identification were: "I feel like I have a lot in common with my community," "My values and my community's values are very similar," "I find it easy to identify with members of my community," "I view my community's problems similar to my own problems," and "I feel limited by the actions of my community" (reverse-coded). While the original scale used a 5-point scale, to maintain consistency with other measures in this study, items were assessed on a 7-point Likert-type scale where 1 is *strongly disagree* and 7 is *strongly agree*. In past research, this scale was found to have acceptable alpha scores across different

stakeholder groups ranging from α = 0.73 to 0.96 in Scott & Stephens' (2009) study. In this study, the composite measure had an α = 0.80, M= 5.00, SD = 0.93, and N = 223.

Dependent Variable: Intention to Prepare

There is considerable discernment between intention and behavior in the disaster preparedness literature. For this study, I focused on intention because it is a key step that leads to desired behavior (gathering emergency supplies) and has been an obstacle for increasing overall preparedness among the public (Paton & Johnston, 2017; Redlener, 2006; Robertson et al., 2018). Intention to prepare was measured using Fishbein and Ajzen's (2010) three-item intention scale: "I expect I will prepare for natural disasters," "I want to prepare for natural disasters," and "I intend to prepare for natural disasters." Past studies using these items have achieved acceptable reliabilities with α = 0.91 (George, 2008) and α = 0.89 (Fu & Wu, 2018). The reliability in this study was: α = 0.91, M= 5.50, SD = 0.90, and N = 226.

Current Household Preparedness

To gauge current household preparedness levels, both the Federal Emergency Management Agency (2017, 2019) and the American Red Cross (2020) suggest using a checklist to assess what items are currently and readily available and accessible in the event of a natural disaster. This list includes a three-day supply of water (one gallon per person, per day) and non-perishable food for all members of household, first aid kit and sanitation supplies, flashlight and extra batteries, an extra set of car keys, credit cards, cash or traveler's checks, important documents and contact numbers including insurance documents, map marked with evacuation routes, easily carried valuables and irreplaceable items, battery-powered radio, and a pair of old shoes. Participants were asked to check the

number of items they have prepared in their household. The sum resulted in an overall current household preparedness score. An additional three items (extra eyeglasses, contact lenses, prescriptions and medications, and personal electronic devices and chargers) may or may not be applicable to all participants, therefore a separate list for these items was asked, but was not included in the overall current preparedness score. At the Orange County community, the current household preparedness score ranged from 0 to 9 items prepared with a $M = 5.42$, $SD = 2.00$, and $N = 125$. At the Central Texas community, the current household preparedness score ranged from 0 to 9 items prepared with a $M = 5.44$, $SD = 2.00$, and $N = 101$. Combined across both communities, the current household preparedness score ranged from 0 to 9 items prepared with a $M = 5.43$, $SD = 2.00$, and $N = 226$. Table 3.2 represents the frequencies of current household preparedness level for each community, and in combination.

Table 3.2. Frequencies of Current Household Preparedness Level

	Orange County Community		**Central Texas Community**		**Combined**	
	Yes	No	Yes	No	Yes	No
Water/Food	92	33	71	30	163	63
First Aid Kit	101	24	81	20	182	44
Flashlight	113	12	91	10	204	22
Keys	81	44	68	33	149	77
Documents	85	40	69	32	154	72
Maps	16	109	12	89	28	198
Valuables	48	77	41	60	89	137
Radio	43	82	38	63	81	145
Shoes	99	26	78	23	177	49

Measures: Control Variables

Demographics

At the end of the questionnaire, I collected information on demographic variables, some of which served as control variables in this study. Respondents had an average age of 76.22 (*SD* = 7.40) and an age range of 65 to 96. Given the influence of demographic characteristics such as age, gender, and socioeconomic status on disaster preparedness, it is appropriate to assume that demographics would influence preparedness in CCRC facilities. In this study, I controlled for the effects of (a) gender and (b) disability status in all regression models, as the literature suggests these control variables are important to give consideration. Specifically, participants were asked "Does anyone in your household have a disability?" 28.3% of respondents noted a disability present in their residence (*n* = 65).

I asked a question about involvement in their CCRC, adapting Stephens et al.'s (2004) question about membership in community organizations. This question states "What community groups are you part of in your residence?" Participants were provided five spaces to provide responses. Membership was calculated as the sum of the number of organizations to which each respondent belongs. On average, participants were members of one community group in their CCRC (*M* = 1.00*)*, with a *SD* = 1.17.

Table 3.3 represents the demographic information of participants for each community, and in combination.

Table 3.3. Demographic Information of Participants

	Orange County Community		**Central Texas Community**		**Combined**	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender						
Female	62	48.8%	51	49.5%	113	49.1%
Male	65	51.2%	52	50.5%	117	50%

Table 3.3., continued

Ethnicity						
White	103	81.1%	81	78.6%	184	80%
Black or African American	4	3.1%	4	3.9%	8	3.5%
Hispanic/Latino	9	7.1%	11	10.7%	20	8.7%
Asian	6	4.7%	3	2.9%	9	3.9%
American Indian/ Alaskan Native	1	0.8%	2	1.9%	3	1.3%
Other	2	1.6%	1	1%	3	1.3%
Marital Status						
Married or Domestic Partnership	85	66.9%	67	65%	152	66.1%
Widowed	20	15.7%	17	16.5%	37	16.1%
Divorced	18	14.2%	16	15.5%	34	14.8%
Never Married	2	1.6%	2	1.9%	4	1.7%
Highest Education						
No Schooling	0	0%	1	1.0%	1	0.4%
High School Graduate	10	7.9%	8	7.8%	18	7.8%
Some College	44	34.6%	37	35.9%	81	35.2%
College Graduate	49	38.6%	41	39.8%	90	39.1%
Advanced Degree	22	17.3%	15	14.6%	37	16.1%

CHAPTER SUMMARY

In this chapter, I detailed the method for carrying out the study on disaster preparedness communication in CCRCs. In particular, I described the data collection timeline as well as both research sites and participants. Additionally, I reviewed the research protocol and operationalization of each variable included in this study. The subsequent chapter offers a complete review of the data analysis process as well as the results.

Chapter 4: Results

STUDY OVERVIEW

This chapter details the data analysis procedures from initial data screening to testing the final model predicting the intention to prepare. The following section describes screening methods used to inspect the quality of the data.

Addressing Statistical Assumptions for Data Analysis

Prior to the analyses, the data underwent a series of tests to look for violations of assumptions regarding normality, linearity, multicollinearity, nor outliers (Warner, 2012). Below, I explain each of the statistical assumptions along with the method used to verify that the data met prerequisites for analysis.

Normality

To make valid inferences, the residuals of the regression should follow a normal distribution. The residuals are simply the error terms, or the differences between the observed value of the dependent variable and the predicted value. In examining the Normal Predicted Probability (P-P) Plot, the residuals in this study were normally distributed in that they conformed to the diagonal normality line indicated in the plot. Thus, I ruled out any violation of normality.

Linearity

The assumption of linearity holds that the relationship between independent and dependent variables are linear. I used a bivariate scatter plot to evaluate this data set's linearity. This graph plotted the standardized residuals on the Y-axis and the standardized predicted values on the X-axis. The assessment of this graph revealed a normal distribution

of data points above and below the zero line for standardized predicted values. Thus, I ruled out any violation of linearity within the data.

Multicollinearity

Multicollinearity occurs when two or more independent variables are highly intercorrelated (Bollen, 1989). The presence of multicollinearity makes it hard to reject the null hypothesis because the size of the standard errors increases. To check for multicollinearity, I analyzed the tolerance statistic and the variance inflation factor (VIF). The tolerance statistic identifies the independence of each variable from all other variables in the data set (Darlington, 1990). Variable independence is reached if the tolerance statistic is greater than 0.20. All independent variables in this study achieved a tolerance score above the minimum threshold. Second, the VIF assesses how much variance is inflated in the estimated regression coefficients due to multicollinearity (Hair Jr. et al., 1995). In this study, each VIF value was below a value of 10, indicating that the assumption of multicollinearity was met (Warner, 2012).

Outliers

A univariate outlier exists when there is an extreme value on a data point for one variable, whereas a multivariate outlier occurs when two or more variables contain a combination of extreme scores. Typically, there are four reasons for outliers: (1) incorrect data entry, (2) participants misread the survey items and made a mistake in their response, (3) participants in the sample do not come from the intended population, or (4) actual dramatic differences in the survey sample exist. Regardless of the reason for outliers, it is essential to test for outliers before conducting any primary statistical tests. If left unaddressed, outliers may affect the variance between variables.

I used Mahalanobis Distance to test for multivariate outliers. This procedure identifies cases that are beyond the normal standard deviations from the mean of the data distribution. I calculated Mahalanobis Distance using the Chi-Square critical value and compared these values against a *p* value (Meyers et al., 2006). Any *p* value less than .001 indicates that an outlier is present. My analysis revealed four cases below the .001 threshold. As a result, I removed those four cases from the data set, with a resulting n = 230.

The following sections address each of the study's hypotheses and research questions. Because previous research shows that demographic characteristics can influence preparedness behaviors (e.g.., Eisenman et al., 2009), it was important to see whether demographic variables affected the variance explained by the components of perceived efficacy within EPPM. For all regression models, I controlled for: (a) gender and (b) disability status by placing them in block one of the regressions. For reference, 28.3% of respondents noted a disability present in their residence. In addition, because gender greatly affects disaster planning and preparations (e.g., Ashraf & Azad, 2015), it was important to understand the influence of gender on perceptions of risk.

Before presenting the tests of the hypotheses and research questions, it is helpful to see the list of questions. See Table 4.1 for that summary.

Table 4.1. Summary of Hypotheses and Research Questions.

H1a:	Community-efficacy is positively related to the intention to prepare for natural disasters.
H1b:	Self-efficacy is positively related to the intention to prepare for natural disasters

Table 4.1, continued

RQ1a:	To what extent does the community resilience domain of disaster management moderate the relationship between community-efficacy and the intention to prepare for natural disasters?
RQ1b:	To what extent does the community resilience domain of information and communication moderate the relationship between community-efficacy and the intention to prepare for natural disasters?
RQ2:	To what extent does community identification moderate the relationship between community-efficacy and the intention to prepare for natural disasters?
RQ3a:	What is the relationship between natural disaster experience and community-efficacy?
RQ3b:	What is the relationship between natural disaster experience and self-efficacy?
H2:	Natural disaster experience positively predicts the intention to prepare for natural disasters.
RQ4a:	What is the relationship between pre-event disaster communication and community-efficacy?
RQ4b:	What is the relationship between pre-event disaster communication and self-efficacy?
H3:	Pre-disaster communication positively predicts current household preparedness.

Table 4.1, continued

H4:	Pre-disaster communication positively predicts the intention to prepare for natural disasters.
RQ5a:	To what extent does response-efficacy moderate the relationship between community-efficacy and the intention to prepare for natural disasters?
RQ5b:	To what extent does response-efficacy moderate the relationship between self-efficacy and the intention to prepare for natural disasters?
RQ6:	How well do the constructs of EPPM's extension of perceived threat and efficacy (Table 2.1) predict older adults' intention to prepare for natural disasters?
RQ7:	Will the inclusion of community-efficacy invoke a fear control or danger control response in older adults?

I first examined the correlations of all variables in the study. Many of the variables had significant positive or negative correlations with each other at the .05 or .01 levels. Table 4.2 presents the bivariate correlations for all variables of interest and controls.

Table 4.2. Bivariate Correlations for Key Study Outcomes and Control Variables

Variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Severity	1														
2	Susceptibility	.16*	1													
3	Response-Efficacy	.04	.07	1												
4	Self-Efficacy	-.18**	-.09	.33**	1											
5	Community-Efficacy	-.02	-.18**	.30**	.34**	1										
6	Pre-Disaster Communication	-.05	.10	-.01	.08	.07	1									
7	Natural Disaster Experience	.05	.08	.07	.24**	.36**	.20**	1								
8	Disaster Management	-.10	.12**	-.13	.10	.10	.21**	.08	1							
9	Information and Communication	-.09	.12	-.02	.14*	.22**	.23**	.18**	.67**	1						
10	Community Identification	.27**	.26**	.09	-.10	.18**	.12	.23**	.08	.27**	1					
11	Intention to Prepare	.30**	-.05	-.02	.26**	.18**	.56**	.19**	.08	.05	.01	1				
12	Current Household Preparedness	-.30**	.03	.02	.10	-.16*	.43**	-.06	.07	.13	-.04	.11	1			
13	Gender	-.18**	-.09	-.15*	.04	-.07	.04	-.01	.15*	.05	.01	-.02	.13	1		
14	Disability	.06	.05	-.06	-.15*	.15*	-.15*	.10	-.11	.03	.15*	-.14*	-.01	-.01	1	
15	Number of Community Groups	.11	.08	.12	-.06	.13	-.14*	.20	-.26**	.15*	.41**	-.26**	-.27**	-.14*	.19**	1

Note. N =223-230, * $p \leq .05$,** $p \leq .01$

HYPOTHESIS 1: COMMUNITY- AND SELF-EFFICACY'S RELATIONSHIP TO THE INTENTION TO PREPARE

The first hypothesis in this study addresses the role of community-efficacy and self-efficacy on the intention to prepare for natural disasters. Hypothesis 1A predicted that community-efficacy would be positively related to an individual's intention to prepare. To assess the relationship between community-efficacy and intention to prepare, a Pearson correlation coefficient was computed. There was a positive correlation between the two variables (r = .18, n = 226, p < .01). Overall, there was a moderate, positive correlation between community-efficacy and intention to prepare. Increases in perceptions of community-efficacy were correlated with increases in the intention to prepare for natural disaster.

Hypothesis 1B predicted that self-efficacy would be positively related to an individual's intention to prepare. To assess the relationship between self-efficacy and intention to prepare, a Pearson correlation coefficient was computed. There was a positive correlation between the two variables (r = .26, n = 226, p < .01). Overall, there was a moderate, positive correlation between self-efficacy and intention to prepare. Increases in perceptions of self-efficacy were correlated with increases in the intention to prepare for natural disaster.

RESEARCH QUESTION 1: COMMUNITY RESILIENCE MODERATING THE RELATIONSHIP BETWEEN COMMUNITY-EFFICACY AND THE INTENTION TO PREPARE

To test Research Question 1 regarding intention to prepare for natural disasters and community resilience factors, and, more specifically, Research Question 1A, considering the extent to which the community resilience domain of disaster management moderates the relationship between community-efficacy and intention to prepare, a hierarchical

multiple regression analysis was conducted using the PROCESS macro for SPSS (Hayes, 2013). In the first step, the control variables (gender and disability) were added. In the second step, two variables were included: community-efficacy and disaster management. These variables accounted for a significant amount of variance in intention to prepare, $\Delta R^2 = .04$, $\Delta F\ (2, 221) = 4.72$, $p < .01$.

To avoid potentially problematic multicollinearity with the interaction term, the variables were centered and an interaction term between community-efficacy and disaster management was created (Aiken & West, 1991). Next, the interaction term between community-efficacy and disaster management was added to the regression model, which accounted for a significant unique amount of the variance in intention to prepare, $\Delta R^2 = 0.12$, $\Delta F\ (1, 220) = 31.91$, $p < .01$, $t_{220} = 5.65$, $\beta = .35$, $p < .01$, indicating that there is evidence of a moderation between community-efficacy and disaster management on intention to prepare. Table 4.3 displays the unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (β), and the R^2 and R^2 change statistics for the tested interaction.

Table 4.3. Interaction Between Community-Efficacy and Disaster Management on the Regression on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.03	.13	-.02		
	Disability	-.28	.14	-.14		

Table 4.3, continued

Step 2					.06	.04*
	Gender	-.02	.13	-.01		
	Disability	-.34	.14	-.16*		
	Community-Efficacy	.17	.06	.19**		
	Disaster Management	.04	.06	.04		
Step 3					.19	.12**
	Gender	-.04	.12	-.02		
	Disability	-.26	.13	-.12		
	Community-Efficacy	.17	.06	.19**		
	Disaster Management	.02	.06	.03		
	Community-Efficacy X Disaster Management	.40	.07	.35**		

* $p < .05$,** $p < .01$

Examination of the interaction plot (Figure 4.1) shows that at low levels of disaster management, when community-efficacy increased, the intention to prepare decreased (-1 SD = 3.75, $p < .01$). At moderate levels of disaster management ($M = 4.83$), there was no

evidence of an association between community efficacy and intention to prepare, $p > .05$. At high levels of disaster management, the association between community-efficacy and intention to prepare was positive (1 SD = 5.91, $p < .01$). See Figure 4.1 for the for the interaction plot.

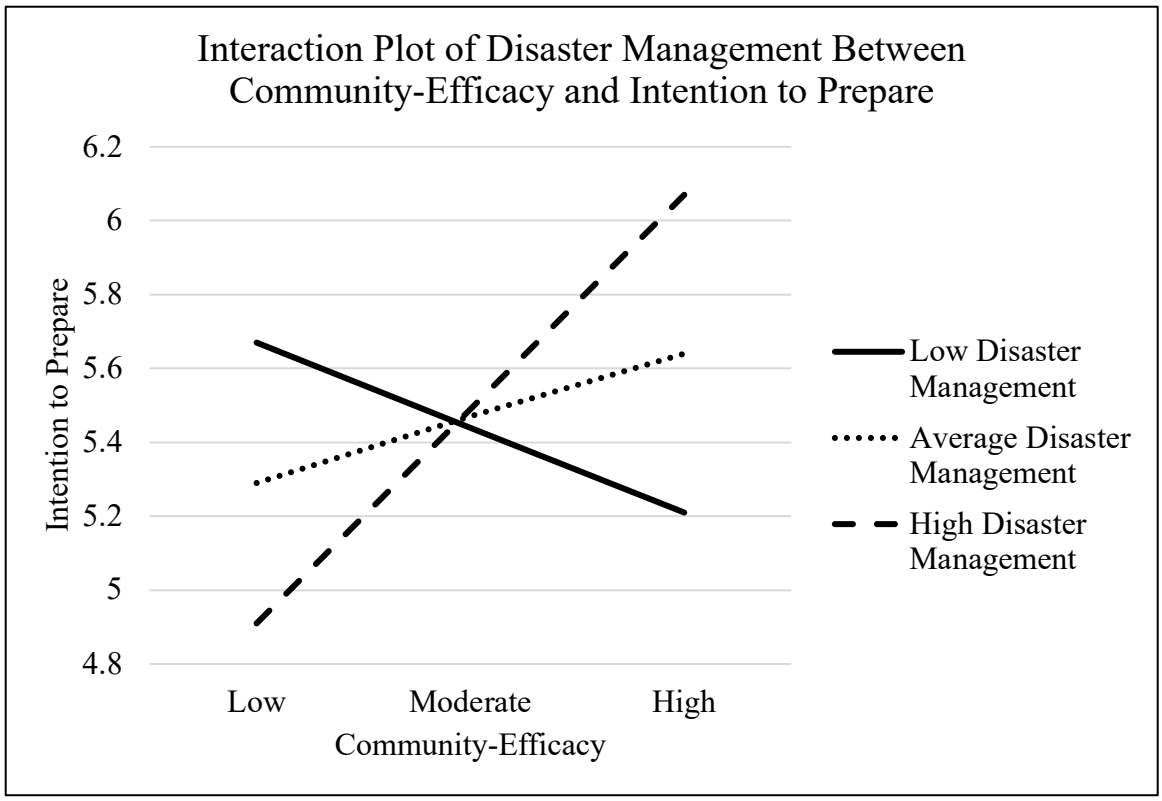

Figure 4.1. Interaction Plot of Disaster Management Between Community-Efficacy and Intention to Prepare.

Research Question 1B looked at whether the community resilience domain of information and communication moderates the relationship between community-efficacy and intention to prepare. Using hierarchical multiple regression with the PROCESS macro for SPSS (Hayes, 2013), the control variables (gender and disability) were added in the

first block. In the second step, two variables were included: community-efficacy and information and communication. These variables accounted for a significant amount of variance in intention to prepare, $\Delta R^2 = .04$, $\Delta F\ (2, 221) = 4.53$, $p < .05$.

To avoid potentially problematic multicollinearity with the interaction term, the variables were centered and an interaction term between community-efficacy and disaster management was created (Aiken & West, 1991). Next, the interaction term between community-efficacy and information and communication was added to the regression model, which did not account for a significant proportion of additional variance in intention to prepare, $\Delta R^2 = .02$, $\Delta F\ (1, 220) = 3.78$, $\beta = .13$, $p > .05$. This indicates that there was no evidence of a moderation between community-efficacy and information and communication on intention to prepare. However, community-efficacy remained a significant predictor in both Model 2 ($\beta = .20$, $p < .01$) and Model 3 ($\beta = .18$, $p < .01$). Table 4.4 displays the unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (β), and the R^2 and R^2 change statistics for the tested interaction.

Table 4.4. Interaction Between Community-Efficacy and Information and Communication on the Regression on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.03	.13	-.02		
	Disability	-.28	.14	-.14*		
Step 2					.06	.04*
	Gender	-.01	.13	-.01		

Table 4.4, continued

	Disability	-.35	.14	-.17*		
	Community-Efficacy	.17	.06	.20**		
	Information & Communication	.01	.06	.02		
Step 3					.07	.02
	Gender	.05	.13	.03		
	Disability	-.32	.14	-.15*		
	Community-Efficacy	.16	.06	.18**		
	Information & Communication	.01	.06	.02		
	Community-Efficacy X Information & Communication	.15	.08	.13		

*$p < .05$, ** $p < .01$

RESEARCH QUESTION 2: COMMUNITY IDENTIFICATION MODERATING THE RELATIONSHIP BETWEEN COMMUNITY-EFFICACY AND THE INTENTION TO PREPARE

Research Question 2 looked the extent to which community identification moderates the relationship between community-efficacy and intention to prepare. A hierarchical multiple regression analysis using the PROCESS macro for SPSS (Hayes, 2013) was first conducted with the control variables (gender and disability) added in the first block. In the second step, two variables were included: community-efficacy and

community identification. These variables accounted for a significant amount of variance in intention to prepare, $\Delta R^2 = .03$, $\Delta F\ (2, 214) = 3.64$, $p < .05$.

To avoid potentially problematic multicollinearity with the interaction term, the variables were centered and an interaction term between community-efficacy and community identification was created (Aiken & West, 1991). The interaction term between community-efficacy and community identification was added to the regression model, which accounted for a significant proportion of the variance in intention to prepare, $\Delta R^2 = .10$, $\Delta F\ (1, 213) = 25.27$, $p < .01$, $t_{213} = -5.02$, $\beta = -.33$, $p < .01$, indicating that there is evidence of a moderation between community-efficacy and community identification on intention to prepare. Table 4.5 displays the unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (β), and the R^2 and R^2 change statistics for the tested interaction.

Table 4.5. Interaction Between Community-Efficacy and Community Identification on the Regression on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.06	.13	-.03		
	Disability	-.25	.14	-.12		
Step 2					.05	.03*
	Gender	-.02	.13	-.01		
	Disability	-.31	.14	-.15*		
	Community-Efficacy	.16	.06	.18**		

Table 4.5, continued

	Community Identification	-.01	.07	-.01		
Step 3					.15	.10**
	Gender	-.01	.12	-.01		
	Disability	-.14	.14	-.07		
	Community-Efficacy	.15	.06	.17*		
	Community Identification	.03	.07	.03		
	Community-Efficacy X Community Identification	-.31	.06	-.33**		

* p < .05,** p < .01X

Examination of the interaction plot (Figure 4.2) shows that at low community identification, when community-efficacy increased, the intention to prepare increased (-1 SD = 4.04, $p < .01$). The slope of average community identification ($M = 5.00$) was also significant, $p < .05$. At average community identification, when community-efficacy increased, the intention to prepare increased. At high levels of community identification, when community-efficacy increased, intention to prepare decreased (1 SD = 5.90, $p < .01$). See Figure 4.2 for the for the interaction plot.

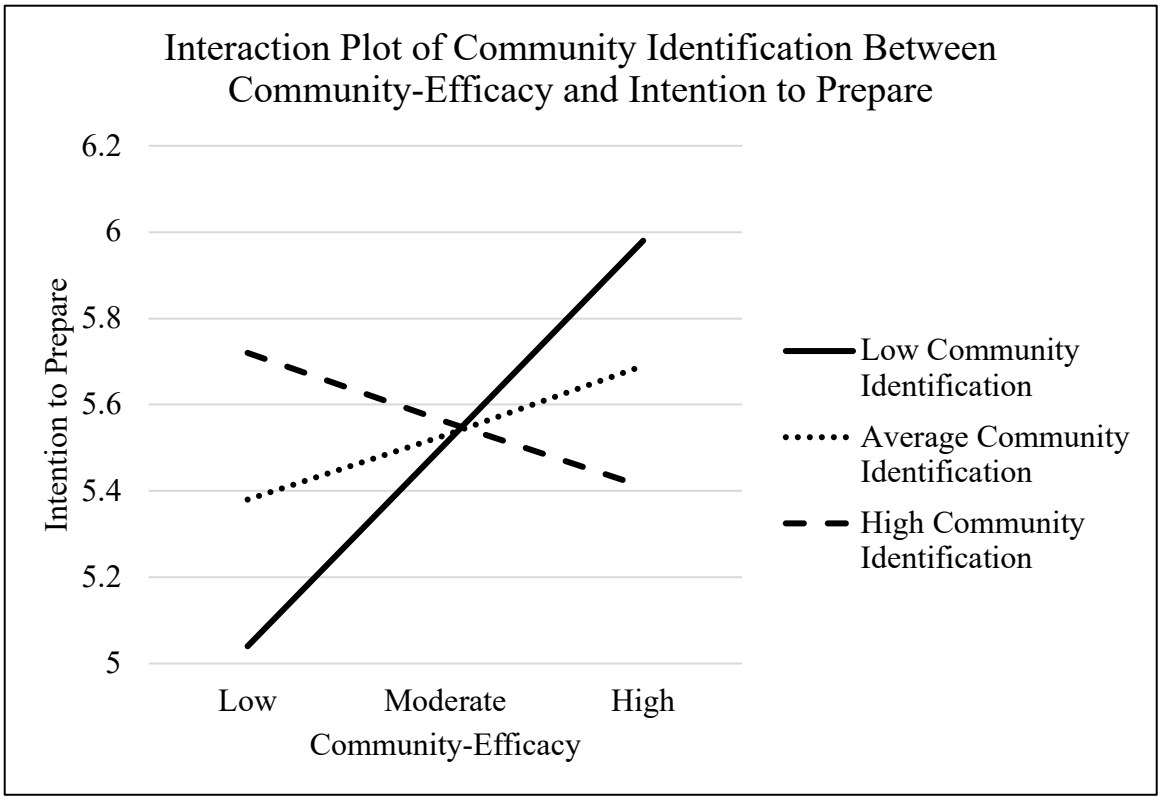

Figure 4.2. Interaction Plot of Community Identification Between Community-Efficacy and Intention to Prepare.

RESEARCH QUESTION 3: THE RELATIONSHIP BETWEEN NATURAL DISASTER EXPERIENCE AND COMMUNITY- AND SELF-EFFICACY

The third research question in this study addressed the role of community-efficacy and self-efficacy on natural disaster experience. Research Question 3A considered the relationship between natural disaster experience and community-efficacy. To assess the relationship between natural disaster experience and community-efficacy, a Pearson correlation coefficient was computed. There was a positive correlation between the two variables (r = .33, n = 230, p < .01). Overall, there was a moderate, positive correlation between natural disaster experience and community-efficacy. Increases in natural disaster experience score were correlated with increases in perceptions of community-efficacy.

Research Question 3B asked about the relationship between natural disaster experience and self-efficacy. A Pearson correlation coefficient was computed to assess the relationship between natural disaster experience and self-efficacy. There was a positive correlation between the two variables (r = .24, n = 230, p < .01). Overall, there was a moderate, positive correlation between natural disaster experience. Increases in natural disaster experience score were correlated with increases in perceptions of self-efficacy.

HYPOTHESIS 2: NATURAL DISASTER EXPERIENCE'S PREDICTOR ON INTENTION TO PREPARE

The second hypothesis stated that natural disaster experience will positively predict the intention to prepare for natural disasters. The statistical significance of the regression of the criterion, natural disaster experience, on the predictor, intention to prepare, was tested using hierarchical multiple regression. Controlling for gender and disability, there is evidence to suggest that the model does improve our ability to predict intention to prepare, F (3, 222) = 4.91, p < .01. Five percent of the variance in intention to prepare can be accounted for by natural disaster experience.

In testing the statistical significance of the regression coefficient in the regression in intention to prepare on natural disaster experience, there is evidence that natural disaster experience predicts intention to prepare: b = .17, β = .21, t_{222} = 3.21, p < .01, 95% CI [.07, 2.74].

RESEARCH QUESTION 4: THE RELATIONSHIP BETWEEN PRE-EVENT DISASTER COMMUNICATION AND COMMUNITY- AND SELF-EFFICACY

The fourth research question in this study addressed the role of community-efficacy and self-efficacy on pre-event disaster communication. Research Question 4A asked about the relationship between pre-event disaster communication and community-efficacy. To

assess the relationship between pre-event disaster communication and community-efficacy, a Pearson correlation coefficient was computed. There was a nonsignificant correlation between the two variables ($r = .08$, $n = 230$, $p > .50$).

Research Question 4B was about the relationship between pre-event disaster communication and self-efficacy. To assess the relationship between pre-event disaster communication and self-efficacy, a Pearson correlation coefficient was computed. There was a nonsignificant correlation between the two variables ($r = .08$, $n = 230$, $p > .50$).

HYPOTHESIS 3: PRE-EVENT DISASTER COMMUNICATION'S PREDICTOR ON CURRENT HOUSEHOLD PREPAREDNESS

The third hypothesis stated that pre-event disaster communication will positively predict current household preparedness. The statistical significance of the regression of the criterion, pre-event disaster communication, on the predictor, current household preparedness was tested using hierarchical multiple regression. Controlling for gender and disability, there is evidence to suggest that the model does improve our ability to predict current household preparedness, F (3, 222) = 18.80, $p < .01$. 19.2% of the variance in current household preparedness can be accounted by pre-event disaster communication.

In testing the statistical significance of the regression coefficient in the regression in current household preparedness on pre-event disaster communication, there is evidence that pre-event disaster communication predicts current household preparedness: b = .77, $\beta = .44$, $t_{222} = 7.21$, $p < .01$, 95% CI [.56, .98].

HYPOTHESIS 4: PRE-EVENT DISASTER COMMUNICATION'S PREDICTOR ON INTENTION TO PREPARE

The fourth hypothesis stated that pre-event disaster communication will positively predict intention to prepare. The statistical significance of the regression of the criterion,

pre-event disaster communication, on the predictor, intention to prepare, was tested using hierarchical multiple regression. When controlling for gender and disability, there is evidence to suggest that the model does improve our ability to predict intention to prepare, F (3, 222) = 33.32, $p < .01$. 30.1% of the variance in current household preparedness can be accounted by pre-event disaster communication.

In testing the statistical significance of the regression coefficient in the regression in intention to prepare on pre-event disaster communication, there is evidence that pre-event disaster communication predicts intention to prepare: b = 0.47, $\beta = 0.55$, $t_{224} = 9.69$, $p < .01$, 95% CI [.37, .56].

RESEARCH QUESTION 5: RESPONSE-EFFICACY MODERATING THE RELATIONSHIP BETWEEN COMMUNITY- AND SELF-EFFICACY AND THE INTENTION TO PREPARE

To test Research Question 5A considering the moderating impact of response-efficacy on the relationship between community-efficacy and intention to prepare, a hierarchical multiple regression analysis was conducted using the PROCESS macro for SPSS (Hayes, 2013) with the control variables (gender and disability) added in the first block. In the second step, two variables were included: community-efficacy and response-efficacy. These variables accounted for a significant amount of variance in intention to prepare, $\Delta R^2 = .05$, ΔF (2, 221) = 5.48, $p < .01$.

To avoid potentially problematic multicollinearity with the interaction term, the variables were centered and an interaction term between community-efficacy and response-efficacy was created (Aiken & West, 1991). Next, the interaction term between community-efficacy and response-efficacy was added to the regression model, which accounted for a significant proportion of the variance in intention to prepare, $\Delta R^2 = .08$, ΔF (1, 220) = 19.30, $p < .01$, $t_{220} = -4.40$, $\beta = -.29$, $p < .01$. Table 4.6 displays the

unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (*β),* and the R^2 and R^2 change statistics for the tested interaction.

Table 4.6. Interaction Between Community-Efficacy and Response-Efficacy on the Regression on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.03	.13	-.02		
	Disability	-.29	.14	-.14*		
Step 2					.07	.05**
	Gender	-.03	.13	-.01		
	Disability	-.40	.14	-.18**		
	Community-Efficacy	.20	.06	.23**		
	Response-Efficacy	-.10	.07	-.10		
Step 3					.14	.08**
	Gender	-.04	.12	-.02		
	Disability	-.23	.14	-.11		
	Community-Efficacy	.25	.06	.29**		

Table 4.6, continued

Response-Efficacy	-.09	.07	-.09
Community-Efficacy X Response-Efficacy	-.30	.06	-.29**

* p < .05,** p < .01X

Examination of the interaction plot (Figure 4.3) showed that for low levels of response-efficacy, when community-efficacy increased, intention to prepare increased (-1 SD = 4.73, $p < .01$). At the mean of response-efficacy ($M = 5.68$), when community-efficacy increased, intention to prepare increased ($p < .01$). At high response-efficacy, there was no evidence of an association between community-efficacy and the intention to prepare, $p > .05$. See Figure 4.3 for the interaction plot.

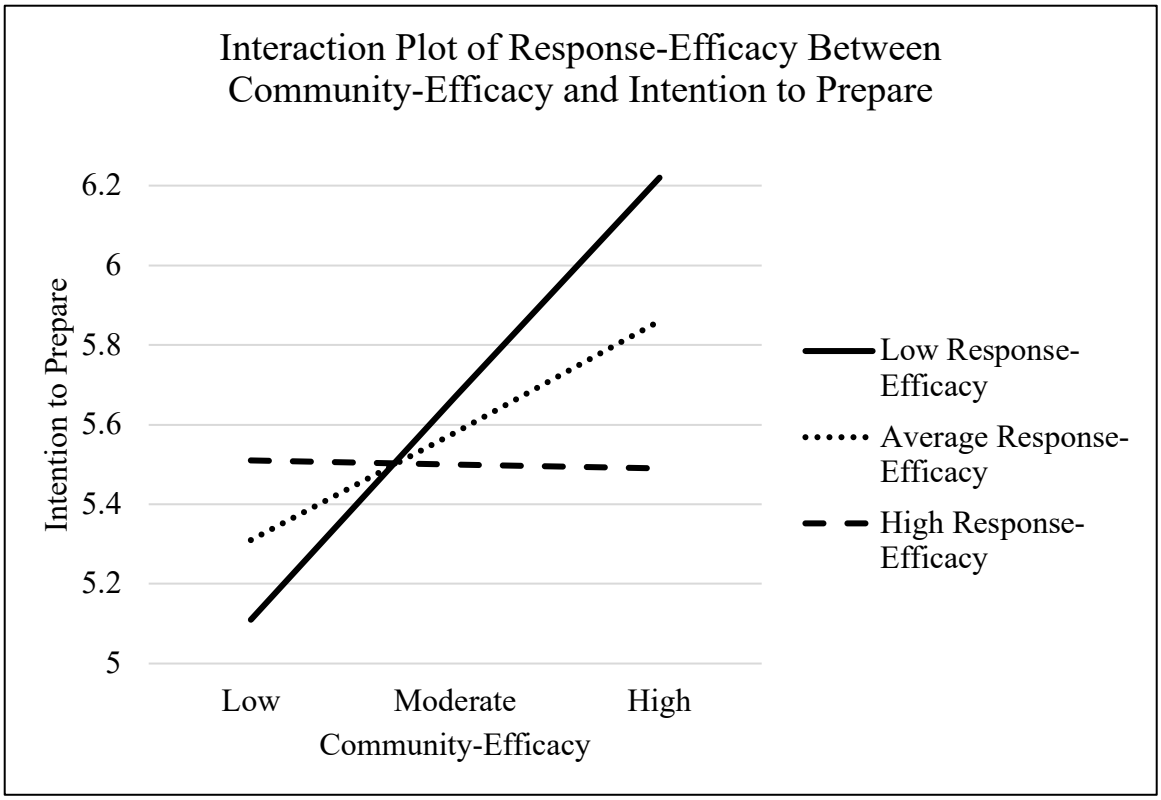

Figure 4.3. Interaction Plot of Response-Efficacy Between Community-Efficacy and Intention to Prepare.

To test Research Question 5B regarding the moderating impact of response-efficacy on the relationship between self-efficacy and intention to prepare, a hierarchical multiple regression analysis using the PROCESS macro for SPSS (Hayes, 2013) was conducted. In the first step, the control variables, gender and disability, were added. In block two, two variables were included: self-efficacy and response-efficacy. These variables accounted for a significant amount of variance in intention to prepare, $\Delta R^2 = .07$, $\Delta F\ (2, 221) = 8.62$, $p < .01$. However, Model 3 with the interaction between self-efficacy and response-efficacy did not account for more variance than just response-efficacy and

self-efficacy by themselves, $\Delta R^2 = .00$, ΔF (1, 220) = .60, $p > .05$, indicating that there is no evidence of a moderation between self-efficacy and response-efficacy on intention to prepare. Table 4.7 displays the unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (β), and the R^2 and R^2 change statistics for the tested interaction.

Table 4.7. Interaction Between Self-Efficacy and Response-Efficacy on the Regression on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.03	.13	-.02		
	Disability	-.25	.14	-.12*		
Step 2					.09	.07**
	Gender	-.08	.13	-.04		
	Disability	-.21	.14	-.10		
	Self-Efficacy	.32	.08	.28**		
	Response-Efficacy	-.12	.07	-.12		
Step 3					.09	.00
	Gender	-.10	.13	-.05		

Table 4.7, continued

Disability	-.22	.14	-.10
Self-Efficacy	.32	.08	.28**
Response-Efficacy	-.13	.07	-.13
Self-Efficacy X Response-Efficacy	.04	.06	.05

* $p < .05$,** $p < .01$

RESEARCH QUESTION 6: CONSTRUCTS OF RISK COMMUNICATION PREDICTING INTENTION TO PREPARE

To answer the sixth research question about how well the components of perceived threat and efficacy within EPPM predict the intention to prepare, a four-stage hierarchical multiple regression was conducted with intention to prepare as the dependent variable. The control variables, gender and disability, were added into the first block of the regression model. Variables regarding the predictive ability of threat (severity and susceptibility) were entered second, because, according to EPPM, a threat appraisal must occur before further processing takes place. In Model 3, the perceived efficacy components, response-efficacy and self-efficacy, were included. The final variable, community-efficacy, was included in Model 4 to determine if the inclusion of this new variable improved the overall predictive ability of the model. Table 4.8 displays the unstandardized regression coefficients (B), standard errors (SE B), standardized regression coefficients (*β),* and the *R*-squared and *R*-squared change statistics for the regression model.

Table 4.8. Hierarchical Regression Model of Components of Risk Communication on Intention to Prepare

	Variable	B	SE B	β	R^2	ΔR^2
Step 1	*Controls*				.02	
	Gender	-.03	.13	-.02		
	Disability	-.28	.14	-.14*		
Step 2					.11	.09**
	Gender	.07	.12	.04		
	Disability	-.30	.13	-.14*		
	Severity	.35	.07	.31**		
	Susceptibility	-.08	.06	-.09		
Step 3					.21	.11**
	Gender	.04	.12	.02		
	Disability	-.22	.13	-.10		
	Severity	.42	.07	.36**		
	Susceptibility	-.06	.06	-.07		
	Self-Efficacy	.40	.07	.35**		
	Response-Efficacy	-.15	.06	-.15*		
Step 4					.23	.02**
	Gender	.05	.12	.03		
	Disability	-.28	.13	-.14*		

Table 4.8, continued

Severity	.41	.07	.36**
Susceptibility	-.03	.06	-.04
Self-Efficacy	.35	.08	.31**
Response-Efficacy	-.18	.07	-.18**
Community-Efficacy	.13	.06	.15*

* p < .05,** p < .01

In the second step of hierarchical multiple regression, two predictors were entered: severity and susceptibility. The second model was statistically significant, $\Delta R^2 = .09$, F (4, 221) = 6.70; $p < .01$ and explained a total of 11% of variance in intention to prepare. Controlling for gender and disability, severity and susceptibility explained an additional nine percent of the variance in intention to prepare. Disability was a significant control in this regression model, and the unique contribution of severity was significant (see Table 4.8). After entry of response-efficacy and self-efficacy at Step 3, the total variance explained by the model was 21% (F (6, 219) = 9.86; $p < .01$). The introduction of the efficacy variables explained an additional 11% of variance in intention to prepare, after controlling for the gender, disability, severity, and susceptibility ($\Delta R^2 = .11$; ΔF (2, 219) = 14.53; $p < .01$). Only severity, self-efficacy, and response-efficacy were significant predictors in Model 3.

When adding community-efficacy to the model in Step 4, the model was statistically significant, F (7, 218) = 9.24; $p < .01$ and explained 23% of variance in intention to prepare. The inclusion of the community-efficacy variable explained an

additional two percent of the variance in intention to prepare. This is a significant contribution to the model, $\Delta R^2 = .02$; ΔF (1, 218) = 4.57; $p < .01$. In the final adjusted model, five out of seven predictor variables were statistically significant, with severity recording a higher standardized Beta value ($\beta = .36$, $p < .01$) than self-efficacy ($\beta = .31$, $p < .01$), community-efficacy ($\beta = .15$, $p < .05$), disability ($\beta = -.14$, $p < .05$), and response-efficacy ($\beta = -.18$, $p < .01$). The negative standardized Beta value for response-efficacy ($\beta = -.18$) indicates that an increase of one standard deviation of response-efficacy results in a decrement of .18 of a standard deviation of the intention to prepare. That is, as response-efficacy decreases, individuals are more likely to report an intent to prepare. I provide more explanations of this finding in the discussion.

RESEARCH QUESTION 7: DETERMINING A FEAR CONTROL OR DANGER CONTROL RESPONSE TO NATURAL DISASTERS

In order to determine whether older adults experience a fear control or danger control response to natural disasters, Witte (1998) suggests it is worthwhile to calculate the discriminating value between one's perceived threat and perceived efficacy, and she provides a formula for how to calculate this value.

$$\boldsymbol{Discriminating\ Value} = \sum(\boldsymbol{Perceived\ efficacy}) - \sum(\boldsymbol{Percieved\ threat})$$

Witte et al. (1996) call this calculation a discriminating value "because it discriminates between individuals in fear control and those in danger control" (p. 321). Adding the numerical scores for the perceived efficacy items together, as well as the numerical scores for the perceived threat items, then subtracting the threat score from the efficacy score, results in the discriminating value. A positive value means the target audience is engaging in a danger control process because perceptions of efficacy are stronger than the perceptions of the threat. A negative value means the target audience is

engaging in a fear control process because perceptions of threat are stronger than perceptions of efficacy.

Once the discriminating value is determined, Witte et al. (2001) state that researchers and practitioners can develop effective, targeted messages that reflect participants' perceptions accurately. In this study, using the exact four variables from RBD index revealed an average discriminating value of M = -.33, SD = 2.10, indicating that participants in this study are likely to engage in fear control processes to manage natural disasters.

I also determined the discriminating value when including community-efficacy instead of response-efficacy. Response-efficacy was not included in the score because several studies suggest it is more difficult to incorporate in health communication campaigns (Cismaru et al., 2009), and that some participants in this study interpreted response-efficacy toward natural disasters as not being preventable (see discussion for the further consideration of this finding). The average discriminating value when including community-efficacy was M = -.80, SD = 2.32, suggesting, again, that even with this variable, participants would likely engage in fear control processes. I discuss the implications of this finding as a future direction in the discussion.

Table 4.9 provides a complete summary of the hypotheses and research questions in this study and their corresponding results.

Table 4.9. Summary of Results

H1a:	Community-efficacy is positively related to the intention to prepare for natural disasters.	Supported

Table 4.9, continued

H1b:	Self-efficacy is positively related to the intention to prepare for natural disasters	Supported
RQ1a:	To what extent does the community resilience domain of disaster management moderate the relationship between community-efficacy and the intention to prepare for natural disasters?	Significant Interaction
RQ1b:	To what extent does the community resilience domain of information and communication moderate the relationship between community-efficacy and the intention to prepare for natural disasters?	No Moderation
RQ2:	To what extent does community identification moderate the relationship between community-efficacy and the intention to prepare for natural disasters?	Significant Interaction
RQ3a:	What is the relationship between natural disaster experience and community-efficacy?	Significant Relationship
RQ3b:	What is the relationship between natural disaster experience and self-efficacy?	Significant Relationship
H2:	Natural disaster experience positively predicts the intention to prepare for natural disasters.	Supported

Table 4.9, continued

RQ4a:	What is the relationship between pre-event disaster communication and community-efficacy?	No Significant Relationship
RQ4b:	What is the relationship between pre-event disaster communication and self-efficacy?	No Significant Relationship
H3:	Pre-event disaster communication positively predicts current household preparedness.	Supported
H4:	Pre-event disaster communication positively predicts the intention to prepare for natural disasters.	Supported
RQ5a:	To what extent does response-efficacy moderate the relationship between community-efficacy and the intention to prepare for natural disasters?	Significant Interaction
RQ5b:	To what extent does response-efficacy moderate the relationship between self-efficacy and the intention to prepare for natural disasters?	No Moderation
RQ6:	How well do the constructs of EPPM's extension of perceived threat and efficacy (Table 2.1) predict older adults' intention to prepare for natural disasters?	Four of the Five EPPM Variables and One Control Variable are Significant Predictors

Table 4.9, continued

RQ7:	Will the inclusion of community-efficacy invoke a fear control or danger control response in older adults?	Fear Control Response

CHAPTER SUMMARY

The purpose of this research was to understand the nuances of integrating community-efficacy as a perceived efficacy component of EPPM, as well as to characterize what factors influence older adults' intentions to prepare for natural disasters. Overall, the variables in the extension of EPPM accounted for a significant amount, 23%, of variance in the intention to prepare for natural disaster, with community-efficacy uniquely explaining an additional two percent of the variance in intention to prepare. Many of the hypotheses and research questions in this study addressed the role of community in the disaster context. This builds on extant research that tends to focus on the individual's role, not the perception of others, in natural disaster planning.

In the final chapter, I discuss the most meaningful findings from this study in terms of their contribution to communication literature on risk, resilience, natural disasters, and older adults. In many ways, this research is a starting point for future studies to explore and extend this under-examined area of communication. I offer potential directions for such work in the following chapter, with attention to future practical applications of this theoretical research. Lastly, I discuss the findings from this study considering the limitations present during data collection.

Chapter 5: Discussion

Older adults are considered one of the most vulnerable populations in natural disasters, and our knowledge of the communicative processes behind disaster preparedness for this population. Extant research has called for more scholarship to understand the antecedents to their preparations. The focus of this effort is to bring more attention to the role that community and organizations have on risk behaviors by extending Witte's (1992) Extended Parallel Process Model (EPPM). EPPM, generally an individual-centered theory, includes the concepts of fear, efficacy, and threat, but neglects a collective component, community-efficacy. This research contributes to communication scholarship by highlighting how community-efficacy uniquely explains a significant, but small amount of additional variance on the intention to prepare for natural disasters above all other predictors.

In addition, this research provides evidence that previous experience of natural disasters and pre-event disaster interactions predict the intention to prepare. Previous literature has suggested that it is often challenging to motivate older adults to want to prepare. Understanding how these variables function for this population is key to reducing barriers that many older adults face in motivating them to gather emergency supplies in their residence. The findings suggest that participants in this study may have expected the management and staff of their continuing care retirement community (CCRC) to handle disaster preparations for them. However, older adults should maintain a customized emergency supply kit in their residence and not necessarily rely on their facility. Furthermore, organizational communication research has generally ignored older adult samples (with some exceptions), when, in fact, older adults in the U.S. will soon outnumber

other demographic groups. This dissertation confronts this challenge by studying one of the most vulnerable populations in natural disasters: older adults.

The current study's extension of the perceived efficacy components of EPPM can be useful at predicting older adults' future disaster preparedness behaviors. Given the role of community resilience during natural disasters, as well as the beneficial impact of community within this population, this study investigated several variables that influence the intention to prepare, including community resilience, community identification, previous natural disaster experience, current household preparedness, and communication before natural disasters. Together, the discrete investigation of these variables provide insight into both theoretical and practical considerations needed for understanding the older adult context.

To that end, this chapter expands upon how the findings from this study contribute to existing theory and concepts guiding natural disaster preparedness. This chapter details the key findings and contributions of this dissertation, including theoretical contributions of incorporating organizational phenomena into a health communication model, and broader practical impacts relevant to older adults. I conclude the chapter by addressing the study's limitations and future directions for scholars interested in advancing the communicative study of natural disaster preparedness.

KEY FINDINGS AND CONTRIBUTIONS

EPPM is one of the most highly cited and widely used predictive models depicting how perceptions of threat and efficacy function in regard to motivating action about a particular behavior (Roberto, 2013). Yet, EPPM, and its associated scale, the Risk Behavior Diagnostic (RBD) index (Witte et al., 1996), have remained relatively unchanged since

their conception. Over the last decade, researchers have expressed concerns about possible limitations of the theory (Popova, 2012). For example, scholars have suggested that variables found in other health-related theories and models could be incorporated into EPPM, as well as be significant predictors of intention to take action (Carcioppolo, 2008; Johnson, 2019; Lok, 2019; Sharp, 2005). Further, So (2013) proposed an extension of EPPM, called E-EPPM, and integrated the concept of monitoring and dispositional coping style to address the essence of fear as an emotive predictor. Although So (2013) did not consider community or collective efforts in her extension of the model, the current study addressed suggestions to include additional components in advancing the utility of EPPM (Smith et al., 2007). The present research explored the utility of including community-efficacy in the components of perceived efficacy within the model.

The Inclusion of Community-Efficacy

Most research related to disaster preparedness behaviors is focused on an individual's perception of their own threat and efficacy. The findings in this study showed that the inclusion of community-efficacy into the perceived components of efficacy uniquely accounted for two percent of the variance in the intention to prepare, while the model as a whole, controlling for gender and disability, significantly accounted for 23% of the variance. Bandura (1984, 1986) theorized that a collective notion of efficacy can also influence individual behaviors. Smith et al. (2007) proposed that collective perceptions may fit within EPPM, and their exploratory work on collective-efficacy suggested that this concept may help increase our understanding of health risk perceptions. Roberto et al. (2009) argued that more empirical work needs to be done to understand the influence of others during risk and crises.

The definition of community-efficacy used for this study was an individual's belief in his or her community's ability to perform a recommended behavior. The results from this dissertation provide evidence that community-efficacy perceptions influence a person's intention to prepare for natural disasters. Understanding these results requires an appreciation for nuanced differences between a "collective" and a "community." Sampson et al. (1997) reasoned that "collective-efficacy" and "community-efficacy" are different concepts, because community-efficacy involves trust, interactions, and identification with one's community and neighbors. In contrast, collective-efficacy includes the ability of multiple individuals who may or may not identify with others (Zaccaro et. al., 1995). The inclusion of identification within the operationalization of community-efficacy indicates that this construct encompasses the forging, maintenance, and alteration of linkages between community members.

As hypothesized, the relationship between community-efficacy and the intention to prepare was significant. Dutta-Bergman (2004) states that healthy behaviors can be predicted by "collectively negotiated social identities," rather than just individual choice (p. 6). Roberto and colleagues (2009) note that one's sense of others may be a predictor of behavior in specific health contexts—and the findings in this dissertation exemplify how this is the case in the context of natural disaster preparedness. We know that recovery from natural disasters requires both individual and community action (Spialek & Houston, 2019), and the preparedness phase is no exception.

Smith et al. (2007) argued that, in risk situations, a collective form of efficacy has potential to serve as an even greater predictor of behavior than self-efficacy alone. In this study, the relationship between self-efficacy and the intention to prepare was significant. Both community-efficacy and self-efficacy were significant predictors of the model in

Research Question 6, though self-efficacy contributed almost twice as much to intention to prepare than community-efficacy. Nevertheless, the inclusion of community-efficacy is valuable to the model, explaining a significant, albeit small, portion of the variance of the model. These findings provide evidence that it is valuable to consider community as a construct related to perceptions of efficacy.

Response-Efficacy's Role in Natural Disaster Preparedness

The variable of response-efficacy, defined as an individual's belief about the effectiveness of a recommended action to avert or lessen a specified health threat, revealed unique findings in this study. As posited by EPPM, individuals perform a certain behavior when they believe they can do so, and when they take into account the effectiveness of the recommended behavior to achieve a goal (Bandura, 1982). For example, individuals who believe a recommended behavior will not help them overcome a threat may choose not to engage in that behavior, even if they are able to do so. In contrast, individuals who believes the behavior is effective to deterring the threat are more likely to follow the behavioral recommendation when they feel they can do so.

Response-efficacy was a significant predictor in the model in Research Question 6. The negative standardized coefficient indicated that as response-efficacy decreased, participants in this study were more likely to report an intent to prepare While this study revealed a nonsignificant correlation between response-efficacy and the intention to prepare, there is research that suggests response-efficacy can be negatively associated with positive health behaviors (Godino et al., 2014; Lanier & Gates, 1996). Further, Wo and colleagues (2018) state that there are several studies where response-efficacy's role in promoting behavioral change is mixed, and future research should examine covariates that

may evoke negative associations between variables. To understand which covariate was causing the negative standardized coefficient in Research Question 6, I conducted a series of a backward stepwise regression models. With intention to prepare as the dependent variable, the standardized coefficient of response-efficacy was still negative in each attempt to remove variables from the model. Nevertheless, this inverse relationship between response-efficacy and intention is not uncommon (Barnes, 2016).

Another explanation for this finding is based on the fact that we cannot prevent natural disasters from occurring (Spittal et al., 2008). In Witte et al.'s (1996) RBD index, the items for response-efficacy are worded, "The behavior is effective in preventing the threat," "The behavior works in preventing the threat," and "If I do recommended response, I am less likely to experience the threat." Given the logic that natural disasters cannot be prevented, it makes sense that participants in this study would still report a likeliness to prepare in order to alleviate the impact of a potential disaster, regardless of whether preparing supplies would prevent natural disasters from occurring.

During the informal interviews collected during data collections, several respondents pointed out that preparing supplies in advance was insufficient to prevent natural disasters from occurring. Some stated that regardless of the supplies prepared, natural disasters would likely occur in the future. This particular interpretation of these items may have made respondents less likely to indicate agreement with the statements related to response-efficacy.

In further examining the role of response-efficacy for disaster preparedness, I performed moderation analyses to understand how the variable acted as a moderator between community-efficacy and self-efficacy and the intention to prepare. Previous research assumed that response-efficacy did not influence the relationship between self-

efficacy and a recommended behavior (Cismaru & Lavack, 2007). However, Choi et al. (2013) provided a rationale that response-efficacy can act as a moderator between variables associated with health behaviors. In this study, there was a significant interaction with response-efficacy moderating the relationship between community-efficacy and the intention to prepare. For participants who reported low and moderate levels of response-efficacy, the relationship between community-efficacy and intention to prepare was positive. At high response-efficacy, the relationship was not significant, meaning at high response-efficacy, there was no evidence of an association between community-efficacy and intention to prepare. In other words, if individuals reported low and moderate levels of response-efficacy, community-efficacy was positively related to the intention to prepare. This finding is consistent with previous literature demonstrating that lower levels of response-efficacy were positively related to following a recommended behavior. For instance, previous research has shown that people with lower response-efficacy are still more likely to follow a recommended behavior like information seeking (Rimal & Real, 2003; Turner et al., 2006).

However, this study showed no evidence that response-efficacy moderates the relationship between self-efficacy and the intention to prepare. While the relationship between response-efficacy and self-efficacy was significant, some research on health behaviors suggest a complex relationship between self-efficacy and response-efficacy. In a study about terrorism preparedness, Wirtz and Rohrbeck (2017) investigated the interaction between self-efficacy and response-efficacy. They found that self-efficacy and response-efficacy influence preparedness behaviors about terrorism interactively, meaning that "self-efficacy on preparedness appears to be limited among individuals who perceive low response-efficacy of preparedness behaviors, [while] response-efficacy appears to

influence preparedness at all levels of self-efficacy" (p. 837). This finding is inconsistent with Badura's (1986) logic that both high self-efficacy and high response-efficacy are needed for any behavioral change to occur. Other scholars (Krieger & Sarge, 2013; Lin & Bautista, 2016) have argued that response-efficacy is important when considering the relationship between self-efficacy and behavioral intentions. In studies where response-efficacy was not a significant predictor of health behavior, it has been suggested that individuals may rely on past experiences and attitudes to determine their perceived level of efficacy, rather than perceptions of how effective the behavior would be in preventing the threat (Basil et al., 2013; Witte & Allen, 2000). I discuss the role of previous disaster experience in the following section.

Contributions to EPPM

The findings from this study demonstrate the value of modifying a health communication model to capture community and organizational phenomena. Although one of the goals of Witte's (1992) EPPM was to transcend different health threats, including community-efficacy as perceived component of efficacy allows for greater insight into the process of natural disaster preparedness in the older adult context. Because there are constraints in communities, including within CCRCs, that influence individuals' behavior (e.g., identification, relationships with community members, and community engagement), models adapted from other areas of communication research should be tailored with respect to the community and organizational settings. While this is not the first study to modify EPPM (Carcioppolo, 2008; Johnson, 2019; Lok, 2019; Sharp, 2005; So, 2013), this study offers exploratory testing of one component of the model within a community and organizational context. The results demonstrate the importance of adapting this model to a

community setting, as the inclusion of community-efficacy uniquely explained a significant amount of the variance in intention to prepare. Context matters, and the context of this research was specific. Model and theory development should continue to explicate the role of community and organizations in our understanding of health behaviors.

Contributions to the Communication Theory of Resilience

Although there is a vast amount of research on the topic of resilience (Caza & Milton, 2012; Reich et al., 2010; Zautra, 2009), how resilience is fostered communicatively has only been recently theorized and explained (Agarwal & Buzzanell, 2015; Bean, 2018; Beck & Socha, 2015; Buzzanell, 2010, 2017, 2018; Houston, 2012, 2018). Buzzanell's (2010, 2017, 2018) communication theory of resilience provides a starting point to explore communicative resilience processes. In the context of community, resilience paints a multifaceted picture of a cooperative response (Houston, 2018). As Houston (2018) states, "community resilience is specifically a collective activity focused on adaptation at the community level" (p. 19). Acosta et al. (2017) argue that community resilience is not necessarily the sum of resilient individuals, but dependent upon the interactions between individuals of different resilience levels. Thus, resilience at the community level is often grounded in processes like information sharing, social connections, and the perceived ability of community members to manage natural disasters (Pfefferbaum et al., 2015).

Pfefferbaum et al.'s (2015) theorizing on community resilience identified two domains relevant to the practices important for building resilience in older adults in the natural disaster context: disaster management and information and communication (Cohen et al., 2016). In this research, I performed moderation analyses to see if these two factors moderated the relationship between community-efficacy and the intention to prepare. Only

the interaction between disaster management and community-efficacy was significant. Disaster management research highlights the desire and ability of one's community to provide assistance regarding each natural disaster phase, not necessarily just the preparedness stage, while information and communication identifies how communities share information about community resources related to natural disasters.

The Community Resilience Domain of Disaster Management

In this dissertation, there was a significant interaction between disaster management and community-efficacy on the intention to prepare. For participants who reported high levels of disaster management, the association between community-efficacy and intention to prepare was positive. At low levels of disaster management, when community-efficacy increased, the intention to prepare decreased.

Ashida and colleagues (2016) provide some insight into this finding. Several participants in their study indicated they would not engage in disaster preparedness behaviors because they believed they would be taken care of through the disaster plans in place in their community or by emergency management organizations. Perhaps participants in this study who reported low levels of disaster management believed in the efficacy of their community—that they would be taken care of—and thus were less likely to want to prepare. To combat this assumption, it may be important to emphasize what the community is doing to help residents be prepared, as well as highlight how others around them can prepare.

The Community Resilience Domain of Information and Communication

There was no evidence of a moderation between information and communication and community-efficacy on the intention to prepare. While the relationship between

information and communication and community-efficacy was significant, information and communication was not associated with the intention to prepare. Although the variable of information and communication encapsulates communication about community resources that influence perceptions of safety in emergencies, perhaps these types of conversations do not translate toward the manifestation of actual behaviors. Ashida et al. (2016) state that disaster preparedness communication for older adults should specifically emphasize emergency response plans and how to be self-sufficient until others can reach and assist them in the event of an emergency. Broadly, communication processes that foster resilience will create meaningful connections with others and redefine "the meanings associated with stressful conditions" (Waldron, 2014, p. 935).

More theorizing must be done to consider how natural disaster preparedness may alter processes related to the communication theory of resilience. Current theory is largely grounded in the bounce-back approach that takes place after a stressful life event (Buzzanell, 2010). However, some scholarly discussion has recently percolated about the role of preparedness in fostering community resilience (Barbour et al., 2020; Carlson, 2018; Rice & Jahn, 2020). Barbour and colleagues (2020) examined how local emergency planning communities (LEPCs) serve as risk communication infrastructure to promote community resilience. They found that these participants in these communities perceived themselves to be part of a planning and response network that could encourage community resilience. They noted that involvement in the planning process was important to foster engagement, and relationships were crucial for communities to cope with a disaster.

With some recent exceptions (see Scharp & Barker, 2020), the communication theory of resilience has not considered the older adult context. Given that older adults exhibit resilient processes over the course of the lifespan (Beck & Socha, 2015), the

considerations of vulnerable populations, like older adults, should be accounted for in continuing research in the resilience context. I hope this dissertation invites such scholarly discussion.

CONTEXTUAL UNDERSTANDING OF OLDER ADULTS

By specifically situating this work within the context of for-profit CCRCs in the U.S., this research provides an understanding of one of the most vulnerable populations during natural disasters: older adults. Recent research has stressed that the needs of older adults in natural disasters must be considered, and that communicative approaches to disaster preparedness should be studied with regard to this population (Stephens, 2020). In this section, I discuss some of the results considering this call to action. This discussion includes considerations of previous disaster experience, current household preparedness, and communication and identification with others in a CCRC.

Previous Disaster Experience

Several resilience-related studies provide a rationale that previous stressful life events affect perceptions of resilience, and the natural disaster context is no exception. Rice and Jahn (2020) state that "research might also look at ways prevention and mitigation activities carry forward lessons from past disasters into future preparedness activities" (p. 4). In their study, Rice and Jahn (2020) used a practice approach (Feldman & Orlikowski, 2011) to showcase how previous natural disasters can inform efforts to reevaluate communication norms and facilitate learning. Bearing in mind the potential impact of previous natural disaster experience on current preparedness efforts, several hypotheses and research questions in the current study addressed this variable. See Figure 5.1 below for frequencies on previous disaster experience at each research site.

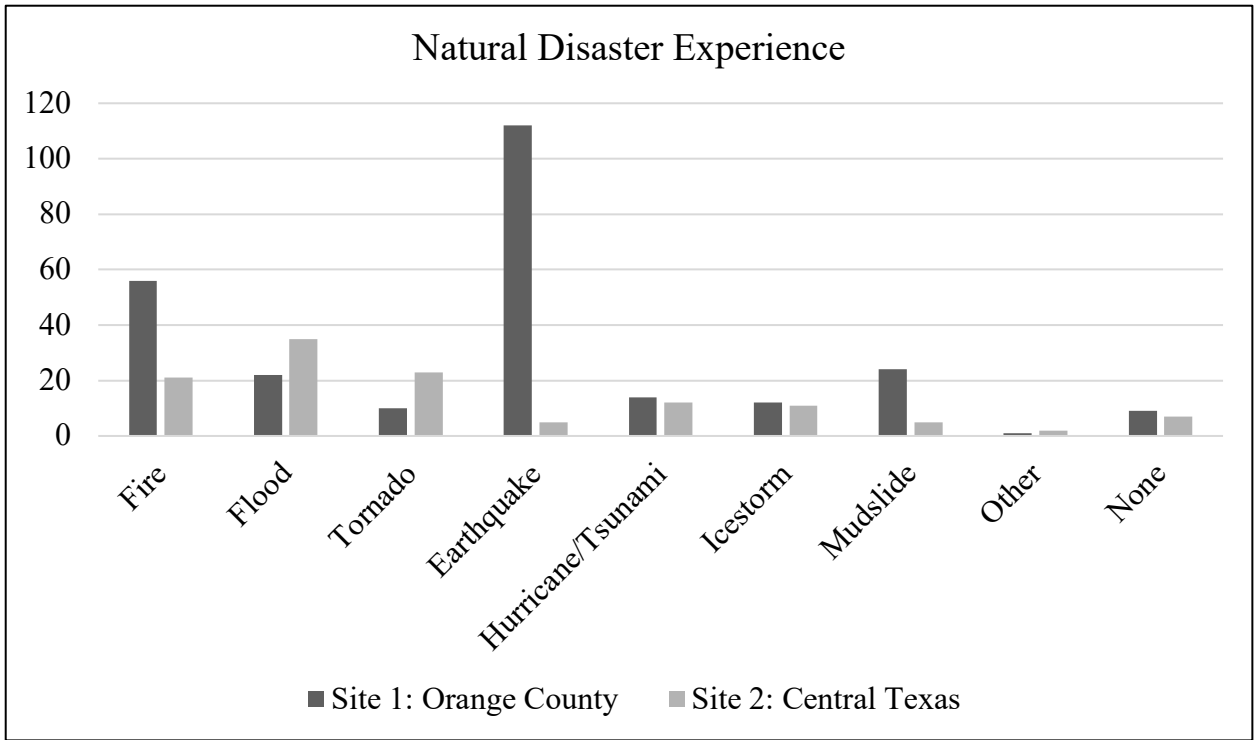

Figure 5.1. Frequency of Natural Disaster Experience at Both Research Sites.

As hypothesized, natural disaster experience significantly predicted the intention to prepare for natural disasters when controlling for disability and gender. In other words, the more natural disasters experienced, the more likely individuals were to intend to engage in preparation behaviors. This finding is consistent with previous literature related to tornados (Blanchard-Boehm & Cook, 2004), and natural disasters generally (Kohn et al., 2012). Interestingly, Silver and Andrey (2014) found that previous disaster experience, age, and several other demographic variables were not significant predictors of natural disaster preparedness. However, because older adults are more likely to have experienced a higher number of natural disasters than the rest of the population (Weber et al., 2018), age may have acted as a confounding variable in that study. The current research revealed that, when

sampling only older adults, previous disaster experience was a significant predictor of preparedness.

The relationships between natural disaster experience and both community- and self-efficacy were also assessed. In both cases, significant, positive relationships were revealed. Literature in this area promotes the idea that individuals with higher natural disaster experience are more likely to view their community as stable post-disaster. That may be because, over time, residents tend to feel less affected by changes that result from a natural disaster. Norris and Murrell (1988) found that previous disaster experience tends to inoculate community members from stress and anxiety related to the disaster experience. Sattler et al. (1995) found that those who live in population-dense regions often have recurrent experiences of disasters, which in turn prepare them for the next disaster. This is likely due to the fact that population growth is higher in disaster-stricken areas.

In this study, perceptions of efficacy were correlated with natural disaster experience. However, it is worth noting that the natural disaster experience score was the only variable which significantly differed across the communities. The most common natural disasters reported at the Orange County community included earthquakes, fires, and mudslides, while residents at the Central Texas community reported flooding, tornado, and fires as the most common (see Table 3.1 and Figure 5.1). Fay-Ramirez et al. (2015) found that those who experienced multiple natural disasters and perceived their community to be disorganized before the disaster were less likely to provide assistance. While this finding does not encompass preparedness efforts, it speaks to the relationship between previous disaster experience and the perceptions that community-efficacy can have on others.

Cutter et al. (2010) examined disaster resilience across various regions in the U.S. and revealed that resilience can vary dependent by area. Specifically, in their study, rural counties had lower disaster resilience than metropolitan regions. While both CCRCs in this study were located in urban, metropolitan regions, this research cannot account for where residents lived previously. Sergeant and Ekerdt (2008) suggest that older adults often move to retirement communities from both urban and rural areas, as well as various types of housing, including single and multifamily homes, apartments, duplexes, condominiums, townhomes, and mobile homes. Future research should untangle the role of previous housing type and location, along with natural disaster experience, to provide a comprehensive understanding of how these variables work together for CCRC residents.

Current Household Preparedness

As hypothesized, pre-event disaster communication positively predicts both current household supplies, as well as the intention to prepare. Specifically, motivating people to maintain current household supplies in advance of a natural disaster remains challenging (Paton & Johnston, 2017; Redlener, 2006; Robertson et al., 2018). Both the American Red Cross (2020) and the Federal Emergency Management Agency (2017) recommend that individuals maintain emergency supplies needed for at least 72 hours and provide a checklist of necessary items. Paek et al. (2010) suggested that these checklists of emergency items can serve as a comprehensive measure of natural disaster preparedness. However, for residents of CCRCs, as well as those who live in retirement communities generally, it may be challenging to assess current household preparedness. Older adults are less likely to have emergency supplies in their residence or feel motivated to gather supplies (Ashida et al., 2016; Benson & Aldrich, 2007). As previously stated, many older

adults in retirement communities perceive their facility will have the necessary emergency supplies on hand, and may not bother to engage in preparedness behaviors (Kohn et al., 2012). Yet Banks (2013) advocated that older adults who have the ability to prepare should attempt to gather the necessary supplies independent of preparations made by their facility, as many facilities may not adapt their emergency plans to account for specific residents' needs (e.g., prescriptions, eyeglasses or contact lenses, etc.).

The results of this study are in line with previous research in that there was evidence that pre-event disaster communication with others predicted current household preparedness and the intention to prepare. Research has shown that interpersonal communication between community members before a disaster contributes to the likelihood of engaging in preparedness behaviors, including gathering emergency supplies (Kim & Kang, 2010). Houston (2012) states the pre-event disaster communication encompasses interactions between residents and community organizations that help shape risk perceptions, demonstrate recommended preparedness behaviors, connect individuals to emergency management organizations, and prepare individuals for potential disaster-related distress. Additionally, observing other individuals prepare can lead residents to seek additional information from other communication sources (Kano et al., 2011).

Communication and Identification with Others

In this study, the relationships between pre-event disaster communication and community- and self-efficacy were not significant. There are several explanations for these insignificant relationships. First, in Spialek and Houston's (2019) study, pre-event disaster communication was not associated with neighborhood belonging nor community resilience perceptions. Their findings "imply that a disaster may be necessary for citizens to connect

communicative processes with neighborhood and community attitudes" (p. 16). Participants in this study were asked to think about natural disasters broadly, not about a recent event or specific natural disaster. Second, despite the fact that the CDCA is a validated instrument (Spialek & Houston, 2018), I did not include items related to the "disaster application" factor of the scale. Perhaps using the items in this way does not fully embrace the spectrum of pre-event disaster communication processes, despite the acceptable internal reliability of the altered scale. Additionally, pre-event disaster communication may include interactions about individual or household disaster preparedness, but not necessarily encompass perceptions of community. Donahue (2014) found that many participants were not willing to participate in disaster preparedness efforts in their community, despite believing disasters are severe.

Although not hypothesized or included as a research question, the relationship between severity and self-efficacy was significant, while the relationship between severity and community-efficacy was not significant. The negative, significant correlation between severity and self-efficacy indicated that as perceived self-efficacy increased, perceived severity decreased. This inverse relationship of self-efficacy and severity has also been found in several health-related studies (Bluestein et al., 2010; Kye et al., 2014). In a natural disaster context, perhaps when people believe they can follow a recommended behavior (e.g., preparing emergency supplies), they view a threat as less severe.

Community Identification

This research also investigated the role of community identification in moderating the relationship between community-efficacy and the intention to prepare. There was evidence of a significant interaction between community identification and community-

efficacy. Specifically, for participants with high community identification, there was a negative association between community-efficacy and the intention to prepare. This finding is surprising, given the vast amount of research suggesting that those who identify with their community are more likely to participate in positive behaviors that support others (Chavis & Wandersman, 1990; LaLone, 2012). Tidwell (2005) indicated that when people strongly identified with a community, they increased their contributions for the betterment of others. One possible explanation for this finding is that those who highly identify with their community may perceive their community to be able to manage a natural disaster, but not necessarily feel the need to prepare themselves. This finding is echoed by other studies about CCRCs and retirement communities generally, in that residents want and expect to be taken care of in these facilities (Bekhet & Zauszniewski, 2016; Perry & Thiels, 2016).

Conversely, for participants with low and average levels of community identification, there was a positive association between community-efficacy and the intention to prepare. This result contrasts with findings from Scott and Stephens (2009) who found that individuals with a low sense of community identification were less likely to engage in the recommended behavior. In the current study, those with low and average levels of community identification perceived their community to be able to manage a natural disaster, but also desired to prepare. Some research (Oommen, 2017) on group identification has explained that even with a low sense of identification, positive outcomes are still possible. In the context of Oommen's (2017) study, for those with low religious identification, the quality of relationships between people of differing religions was positive. Another explanation may be that with low group identification, members may show less involvement with the group, and pursue their individual interests instead (Meeussen & van Dijk, 2016). In the current study, perhaps even those with low and

average community identification perceived community-efficacy to be high, but still intended to prepare on their own.

I also considered community involvement as a potential variable, although I did not hypothesize any relationships. Stephens et al. (2004) discovered that greater the number of community organizations individuals claimed memberships with, the more likely health information sharing occurred. Given that community engagement in CCRCs is linked with several positive health outcomes (Jenkins et al., 2002; Park, 2009), it makes sense to investigate group membership in the CCRC context. In this study, there was no evidence of a relationship between community group memberships in a CCRC and community-efficacy. However, community organization membership was positively associated with community identification and negatively associated with the intention to prepare. While the relationship between community memberships and community identification follows in line with previous research (Stephens et al., 2014), the negative relationship between the number of community organizations and the intention to prepare suggests, like Spialek and Houston (2019) found, that individuals may view disaster preparations not affected by community group membership. Individuals may have believed in the efficacy of the community, but this is quite different from participation in community organizations within these spaces. Future work should consider community organizations within retirement communities as areas to explore disaster-related outcomes.

IMPLICATIONS

Given population estimates from the U.S. Census Bureau (2018b) that predict older adults will outnumber children by 2030, it is important to consider the experience of older adults in both scholarship and practice. Scholarship in organizational communication has

often ignored older adult samples (see McCann, 2017, for an overview of research in aging and organizational communication). This dissertation takes aim at challenging this concern by exploring older adult natural disaster preparedness in the context of CCRCs. In this section, I describe implications these findings for the specific population studied, as well as theoretical implications of this work for older adults.

Retirement Communities as Organizations

At one point in time, CCRCs were considered a last resort for older adults who could not live independently (Chung-Herrera et al., 2003). This is no longer the case, as CCRCs have now developed into living spaces that offer luxury amenities, services, recreation, and health care and for residents with a wide range of care needs. As such, the business model has changed: "The CCRC has been described as an amalgamation of health care, insurance, hospitality, and residential enterprises" (Hurley & Brewer, 1991, p. 366). Nearly 30 years ago, Hurley and Brewer (1991) predicted the CCRC business model would move toward becoming a hospitality and recreation service provider. Now, Sweem and Stowe (2014) find that claim to be even more so true. As "CCRCs [are] moving toward a social and entertainment environment, [in which] it is evident that customer service cannot be ignored" (Sweem & Stowe, 2014, p. 420).

Several studies in communication have examined retirement communities (Alemán, 2001, 2003; Baxter et al., 2002; Braithwaite, 2002; Query Jr. & James, 1989; Simpson & Cheney, 2007; Waldron et al., 2005) but few have considered retirement communities as organizations. Simpson and Cheney's (2007) work is one notable exception. They found that retirement communities often market themselves to promote an active lifestyle. Yet, their study of two New Zealand retirement communities highlights

that when residents participated in community groups, they began to organize themselves around a political issue: senior citizen rights. Considering the findings of this dissertation, especially in light of how residents may perceive their facility to maintain their health and wellbeing, CCRCs are a specific type of organization whereby residents have potential to organize themselves around disaster preparedness efforts.

McCann and Giles (2006) studied intergenerational communication processes of nonmanagerial-level bankers and discovered that older bankers (in their study, defined as ages 50 and older) were viewed as more nonaccommodative than their younger counterparts, and younger bankers tended to favor their age in-group over older bankers (age out-group). In the retirement community context, one study found that residents' satisfaction was most dependent on their perception of staff caring about them as people (O'Bryan, 2007). Although there is little to no data about the characteristics of employees who work at CCRCs, Sweem and Stowe's (2014) analysis of the top executives across 145 CCRCs revealed an age range of 26 to 71, with an average age of 52 years.

While this dissertation did not explore relationships between employees and residents of CCRCs, it is important that future research unpack these possible in-group and out-group tensions that can exist among intergenerational employees and residents. Retirement communities and skilled nursing facilities accommodate highly vulnerable residents who are at risk of suffering abuse, and elder abuse is a human rights problem prevalent across various facility types (Arens et al., 2017). Around 10% of older adults experience some form of elder abuse or neglect, while 80% of staff in nursing homes reported observing abuse (Cooper et al., 2008). This study did not explore these issues, but it is important that future scholarship examine employee relationships with residents, as

several findings in this study concluded that residents may rely on their facility for their disaster preparation needs.

Community's Role in Health Communication Theories

The current study also considered the contribution of community-efficacy on individual behavioral intention to prepare for natural disasters. Although not a construct in Witte's original (1992) model, the perception of community-efficacy served as a significant predictor of behavioral intention in the current study. This finding is noteworthy for future EPPM and health communication theoretical development. While the current study is not arguing for community-efficacy to replace either self-efficacy or response-efficacy as a construct in the perceived efficacy components of the model, the findings suggest that community-efficacy explains a modest, but significant amount of variance in the intention to prepare.

To better understand how community-efficacy influenced intention to prepare, it is imperative to understand what respondents perceived as "their community." While participants were told to think of the retirement community as their community, in the qualitative informal interviews several respondents were more specific and pointed out that their next-door neighbors or a specific community group encapsulated their personal definition of community. In previous studies (Lin, 2019), participants were asked to write their personal definition of community. These definitions represented several entities, including organizations or agencies that want to protect the public from natural disasters, the government, and friends and family. While the association between both self- and community-efficacy on intention to prepare was positive, perhaps in the context of behavioral intentions, if the recommended behavior is anticipated to protect others from a

threat rather than oneself, an emphasis on community-efficacy may serve as a stronger predictor of intention than self-efficacy.

Implications for Practice in Retirement Communities

The results of this study can be useful for both residents and management of older adult living communities, including CCRCs. First, there is evidence that pre-event disaster communication within CCRCs predicts the intention to prepare. Retirement communities, instrumentally, have infrastructures through which they can communicate with residents about how to prepare for disasters, and whereby residents can communicate with each other. The results of this study give credence to the notion that these organizations should encourage communication before a natural disaster among residents about preparedness behaviors. This communication beforehand can include conversations about what to expect if a disaster occurs, the likelihood of a disaster occurring, and how to prepare for a disaster. Guiding communication around these appropriate preparedness behaviors helps shape risk perceptions, as well as the intention to prepare.

Retirement communities can be proactive in highlighting their ability to manage the impact of disasters, as well as explicitly stating the services they provide to residents in preparing for disasters. Specifically, for residents in this study who perceived low levels of disaster management in their community, when community-efficacy increased, the intention to prepare decreased. While residents want and expect to be taken care of in these facilities, the unfortunate reality is that when disaster strikes, it is not realistic that each residents' needs will be responded to in a timely manner. Some disasters are too large, and services in these facilities can be overwhelmed and disrupted by the aftermath of disasters (Bader et al., 2020). Management can state explicitly how their retirement community

actively prepares for future disasters, the type of emergency services provided by facility, as well as what the facility can do for residents in the aftermath of a disaster. Stating this clearly may combat perceptions of lower disaster management, which in turn, may increase residents' intentions to prepare. When residents are aware of what their organization is doing to prepare, it may provoke individuals to prepare on their own.

It may also be important for these communities to consider how residents identify with their retirement community, as this study revealed that community identification moderated the relationship between community-efficacy and the intention to prepare. Retirement communities should investigate how highly identified residents perceive their community's efficacy, which may decrease the intention to prepare. Although community identification and community organization membership are separate constructs, this study revealed that membership in community organizations within these CCRCs was positively associated with community identification. Perhaps management of these retirement communities should analyze how membership in organizations within their community can serve as avenues for sharing health information (Stephens et al., 2004). Distinguishing the highly identified residents who may be part of several extracurricular organizations—and who choose not to prepare because they believe others will come to their aid—is an important step in the risk management process (Wingate et al., 2007).

LIMITATIONS

By investigating the antecedents of intention to prepare, this study has meaningful implications for our understanding of natural disaster preparedness for residents in CCRCs. Despite the support for the addition of community-efficacy into the perceived efficacy

component of the model, this study is not without limitations. Below, I describe how my sample, survey, and data decisions limit the findings of this study.

Although my research sites were appropriate for addressing the study's goals, the sample may have limited my findings. By focusing on one coastally-located community and a community in a large, metropolitan city, the scope of these findings is somewhat limited. Research has found differences between disaster resilience in urban versus rural areas (Cutter et al., 2010). Furthermore, while there is an abundance of literature on CCRCs, the exclusive focus on two for-profit CCRCs also limits the scope of these findings. Non-profit or government-run facilities, as well as varying types of facilities exclusive to certain needs (e.g., hospice, memory care, rehabilitation, skilled nursing) could illicit different perceptions of threat and efficacy. Moreover, the sample size in this study was smaller than the ideal sample size of $n = 300$ (30 participants per each independent and control variable). However, Mody et al. (2008) suggest that in sampling older adults, smaller sample sizes can be considered acceptable, especially as survey mortality is a common impediment.

Another sample limitation was that some residents were skeptical of my presence as a researcher during data collection periods. As I noted in my field notes, several residents at both sites stopped by the room where I was collecting data and asked what personal information they would need to give to me in order to participate. Murphy and colleagues (2008) found that older adults can be suspicious of survey research, and specifically, some may feel that filling out a survey is "a trick and that something other than completing the survey would be expected in return" (p. 4). A fear of scams or exploitation of personal information is a commonplace concern for older adults (Ray et al., 2019). Murphy et al. (2008) suggest that rapport building is crucial for researchers to prevent skepticism. The

researcher should be “prepared and polished, without being slick … [Researchers] need to be aware that they are guests to the respondent’s property and understand how the respondent feels about someone unknown.” (Murphy et al., 2008, p. 3). To establish trust with residents at both communities, I made myself available to answer questions, explained my presence politely, and shared how the results would be used. At the Orange County community, several residents invited me to enjoy a meal with them in the dining room, where I spent several hours learning about the lifestyle of a CCRC. This rapport-building allowed me establish trust, and these informal conversations informed several findings.

Survey responses may also have been subject to social desirability bias, especially given that intention to prepare was a dependent variable in this study. Miniard and Cohen (1983) state that behavioral intentions are a function of expectations based on individual and normative consequences of engaging with a behavior, and prior studies have found that social desirability bias can diminish, inflate or moderate relationships when using intention-related variables (Mensch & Kandel, 1988). However, the intention to prepare variable was used in this study because intention has been a barrier for motivating preparedness behaviors (Redlener, 2006; Robertson et al., 2018). Paton and Johnston (2017) concluded that intending to prepare can lead individuals to take action.

Besides sampling limitations, there were also concerns with some survey items. While all scales used in this study achieved acceptable internals reliabilities, the 12-item RBD index (Witte et al., 1996) only uses three items per variable. Carcioppolo (2008) suggested that using more items to measure the constructs would increase reliability. Generally, a small number of items for a scale will reduce the Cronbach’s alpha level (Carmines & Zeller, 1979). For studies that achieved low Cronbach’s alphas when using the exact three items per variable from the RBD index, additional items were often chosen

from previous literature and added to the original three items (Sharp, 2005). Because I created the measure of community-efficacy for this study, I cautiously heeded this advice, but only included the specific three items that mirrored the wording with the RBD index.

FUTURE RESEARCH AGENDA

It is hard to escape the reality that natural disasters are becoming more common, and it remains certain another natural disaster will strike in the future (Bader et al., 2020). Considering both the importance preparing emergency supplies in advance (Baker & Evans, 2008) and our greater understanding of the role community plays in natural disasters, it is surprising there is so little interest for organizational communication research on this topic. Real (2010) claims that "communication is an important factor in the prevention of injuries, illnesses, and fatalities" within organizations (p. 458). Although the present study helps to identify antecedents of intention to prepare, research on disaster preparedness within the older adult context demands more scholarly attention. In the final section of this chapter, I draw from organizational and health communication research to illustrate how this body of research can enrich future studies on natural disaster preparedness.

Scale Development to Understand Community-Efficacy

While this research represents an initial effort to understand how community-efficacy contributes to behavioral intentions, proper scale development and validation of a measure of community-efficacy should be considered as a future research direction. While I adapted the RBD measure of self-efficacy in the community context and achieved acceptable internal reliability, we should engage in efforts to more fully develop this construct. Several existing measures in communication include constructs related to

community in the context of natural disasters, but do not necessarily include explicit items about the efficacy of one's community. Some examples of scale development in this area include Heath and Lee's (2016) community perception items, Pfefferbaum et al.'s (2015) CART community resilience instrument, and the CDCA (Spialek & Houston, 2018), which includes items related to communication with others.

Several tests of EPPM that have included additional collective or community perceptions have done so without proper scale development and validation (Johnson, 2019; Lok et al., 2019). Outside of EPPM, Kim and Ball-Rokeach (2006) include a collective form of efficacy in their Communication Infrastructure Model of Civic Engagement, and their measure of collective-efficacy has been used in several studies (Matsaganis & Wilkin, 2015; Nah & Yamamoto, 2019). Other health behavior theories highlight the impact of community member influence on health outcomes, including the Theory of Reasoned Action (Ajzen & Fishbein, 1974), the Theory of Planned Behavior (Dutta-Bergman, 2004), and Social Cognitive Theory (Bandura, 1977). Given logics from previous research, as well as the finding in this dissertation that community-efficacy contributes uniquely to the intention to prepare, developing and validating a comprehensive measure of community-efficacy and embedding it within further EPPM studies remains an important next step.

Message Design with Community-Efficacy

Future research should also consider the extent to which messages with community-efficacy targeted toward older adults improve the intention to prepare. Although this research did not test the effects of messages using EPPM, the theory is useful for guiding a general approach to designing effective health risk messages. This is because EPPM specifies what factors need to be included, and how they need to be balanced (Basil &

Witte, 2012). As Witte et al. (2001) state, the model allows health communicators "to induce certain perceptions, because perceptions are the basis of action, before we actually" engage in the recommended health behavior (p. 20).

In this research, Witte's (1998) formula for determining the discriminating value between a fear control and danger control response was used in to calculate if the inclusion of community-efficacy would invoke a fear control or danger control process. Including community-efficacy instead of response-efficacy invoked a negative value, indicating a fear control response. For people experiencing fear control, messages must focus on increasing the perception of efficacy toward the recommended behavior, in this case, preparing emergency supplies. Because the perceived threat is already high, an attempt should be made to avoid references to the severity and susceptibility of potential natural disasters. In a study by Witte (1991), when participants with low-efficacy perceptions were made to feel susceptible to HIV/AIDS, they were more likely to engage in risky sexual activity—the opposite of what the message encouraged. Hubbell (2006) found that when perceived threat was high, avoidance of the recommended behavior increased. Thus, messages about natural disaster preparedness for older adults should be designed to encourage efficacy, both self-efficacy and community-efficacy, regarding natural disaster preparedness behaviors. To increase efficacy, practitioners or providers should emphasize that the recommended response (preparing emergency supplies) works in lessoning the potential impact of natural disasters, is feasible, and easy for older adults to follow. Witte et al. (2001) explains that Bandura's (1977) recommendations of performance accomplishments (e.g., role-playing, performing the behavior) and verbal persuasion (e.g., self-instruction, suggestions) can be effective increasing efficacy perceptions. "When people have the opportunity to role-play difficult behaviors or recommended responses, it

provides them with ideas and strategies for how to act in real situations" (Witte et al., 2001, p. 74). The foundation of these strategies, such as role-playing or modeling behaviors, includes interaction with others, which can be swiftly facilitated within a retirement community setting. Research on work teams suggests that engaging in role-play exercises with others increases team efficacy perceptions (de Jong et al., 2007), while observing others taking part in preparedness behaviors can lead individuals to engage in information seeking (Kano et al., 2011). Perhaps performance accomplishments can make perceptions of community-efficacy visible others, as this activity, when done effectively, can showcase how others in their community can prepare, have the ability to prepare, and can easily prepare for natural disasters.

While this study did not test EPPM, Atkin and Freimuth (2013) state that health communication campaigns often fail because they are not systematic in their approach when incorporating new components. "Health educators have typically not used systematic approaches to the preproduction stage, instead, message tend to be produced in a haphazard fashion based on the creative inspiration of copywriters and artists" (Atkin & Freimuth, 2013, p. 53). The results of this study give credence that community-efficacy is important to consider for older adults, and warrants inclusion in future work when testing messages targeted toward older adults and natural disasters. In Popova's (2012) systematic review of the literature, as well as in de Hoog et al.'s (2007) and Witte and Allen's (2000) EPPM meta-analyses, many studies used experimental design to test EPPM and included a message manipulation for both efficacy and threat. I hope to explore an approach like this in my future work.

Older Adults and Technology

While this study did not examine variables related to technology use, data from the Pew Research Center (2019) suggest that older adults are adopting technology at faster rates than before. Over the last decade, social media use by older adults has increased by 10%, while 68% of baby boomers (ages 55 to 73) and 40% of the silent generation (ages 74 to 91) own a smartphone. Because messages about natural disasters are increasingly shared through social media (Murthy, 2018; Stephens et al., 2018), more work should be done to explore how older adults communicate about natural disasters using technology. Bell et al.'s (2019) report of older adult's emergency planning revealed that less than half of respondents signed up to receive local emergency alerts on their mobile device, while over a third of respondents reported using social media for information seeking about a disaster or emergency. These snapshots point to the importance of investigating how older adults communicate using technology before and during a natural disaster.

Sampling Older Adults

This research considered the older adult experience for residents in CCRCs, but scholarship in organizational communication has largely ignored this population. As of 2020, *Management Communication Quarterly*, widely considered to be the flagship journal for organizational communication scholarship, has only published two manuscripts directly related to the experience of older adults (Tretheway, 2001; Smith & Dougherty, 2012). These two studies both used a master narrative framework to explore recurring overarching stories told within cultures that create expectations and norms. Smith and Dougherty's (2012) study on the master narratives of retirement showed that retirement is both a marker of freedom and success. Tretheway's (2001) work on the master narrative of aging as a form of decline suggested that women feel they have less to offer their communities and

organizations as they age, revealing that participants often rejected the overwhelming aging discourse by concentrating on the benefits of aging and constructing new identities for themselves. At the time, Tretheway (2001) suggested that "age ideology has not been theorized by communication scholars, yet it is probably as important as gendered or racial ideologies in terms of influencing our individual and collective experiences and our identities" (p. 185). Almost 20 years later, little research within organizational communication has attempted to understand our aging population.

With some exceptions in the volunteer literature (Chinn & Barbour, 2013), scholarship outside of organizational communication has produced more work on our understanding of older adults, however, particularly within the subfields of health communication (Nussbaum et al., 2003), interpersonal communication (Mares & Fitzpatrick, 2004), and family communication (Dickson & Hughes, 2014). Furthermore, future work should consider studying the relationship between older adults and communicative processes of resilience. This study revealed that communicative resilience processes can moderate the relationship between perceptions of community-efficacy and the intention to prepare. As Ganesh and Zoller (2014) state, "Building resilience is not framed in terms of sacrifice and loss, but is about creating livable futures that focus on developing human happiness through meaningful relationships, a sense of purpose, and environmental harmony" (p. 241). This is ever so important for residents of retirement communities.

Beyond offering a community and organizational communication contribution to an individual-centered health communication theory, I urge scholars to retest the extension of the perceived components of efficacy presented in this dissertation. The utility of this extension increases when studies can test the model with the extension and account for the

variance explained. While this dissertation did not test EPPM, Witte et al. (1992) express that more work should be done to theoretically investigate variables included within health campaigns before testing them. This work provides a starting point for considering how perceptions of community-efficacy function as a component of perceived efficacy. However, given the need to operationalize community-efficacy scales, future work must continue to generate a robust measure for these constructs. Future studies using EPPM should also consider other community and organizational variables that may influence the intention to prepare.

CONCLUSION

The results of this study offer distinct contributions to both theory and to our contextual understanding of older adults and natural disaster preparedness. While preparing in advance for natural disasters is a life-saving behavior, disaster preparedness is often treated as an individual-level process, and perhaps that is at the heart of the problem in creating lasting behavioral change for older adults. Perceptions of community-efficacy influenced intention to prepare, but the findings also suggested that these older adults may have expected the owners, managers, and staff of their care facilities to handle disaster preparedness for them. By extending the perceived efficacy components of EPPM, this study invokes a larger discussion over the utility of health communication models to capture community and organizational communication phenomena. Together, the contributions of this research provide substantial areas of exploration for future natural disaster, health, and organizational communication research. Unfortunately, it is only a matter of time until the next natural disaster strikes, and our most vulnerable populations should not be forgotten in the process.

Appendices

APPENDIX A: CONSENT FORM

TEXAS
The University of Texas at Austin

UT Austin IRB Approved
Protocol Number: 2019-06-0108
Approved: 08/05/19

Title of the Project: Community Organizing for Natural Disasters
Principal Investigator: Brett W. Robertson, The University of Texas at Austin
Co-Investigator: Keri K. Stephens, The University of Texas at Austin

Consent to Participate in Research

Invitation to be Part of a Research Study

You are invited to be part of a research study. This consent form will help you choose whether or not to participate in the study. Feel free to ask if anything is not clear in this document.

What is the study about and why are we doing it?

The purpose of our research is to better understand how people prepare for natural disasters.

What will happen if you take part in this study?

If you agree to participate in this study, you will be handed a questionnaire where you will give your opinions. You will hand the questionnaire back to the researcher once you have finished filling it out. If you choose to participate in an interview, you will be asked questions about your attitudes toward disaster preparedness.

How long will this study take and how many people will be in the study?

Participation in this survey part of this study should take no more than 20 minutes and will include approximately 250 participants. If you choose to participate in an interview, it will take no longer than 45 minutes.

What risks and discomforts might you experience from being in this study?

There are no foreseeable risks to participating in this study. The risks are no greater than those experienced in daily life.

How could you benefit from this study?

You will receive no direct benefit from participating in this study; however, the results of the study are expected to contribute to improving disaster preparedness.

1

What data will we collect from you?

As part of this study we will collect your responses to our study questions. All raw survey data and interview audio files will be stored on a UT Austin encrypted laptop. The survey form and interview audio file will contain no identifying information, as we will not collect or store your name. After analyzing this data, the raw data will be stored on a UT Austin-approved cloud storage (BOX) site that is password protected, and retained until all data are published, but for no longer than 10 years. No identifying information will be stored.

How will we protect your information?

Your name will not be linked to your response. You may reserve the right not to answer any question or to stop the survey and/or interview at any time without penalty.

If it becomes necessary for the Institutional Review Board to review the study records, information that can be linked to you will be protected to the extent permitted by law. Your research records will not be released without your consent unless required by law or a court order. The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate it with you, or with your participation.

What will happen to the information we collect about you after the study is over?

Once the study is completed, we will destroy all the raw data associated with the project. Aggregated data may be published in research journals.

Your Participation in this Study is Voluntary

Your participation is voluntary. You may decide not to participate at all or, if you start the study, you may withdraw at any time. Withdrawal or refusing to participate will not affect your relationship with The University of Texas at Austin in any way.

Contact Information for the Study Team and Questions about the Research

If you have any questions about this research, you may contact:

Brett W. Robertson, 512-471-0554

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the following:

The University of Texas at Austin
Institutional Review Board
Phone: 512-232-1543
Email: irb@austin.utexas.edu

Please reference study number 2019-06-0108.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. We will give you a copy of this document so if you have any questions about the study later, you can contact the researcher using the information provided above.

In order to participate in this research, you must be not require a legally authorized representative, and are not cognitively impaired that influence your decisional capacity.

Please indicate using a verbal yes that you meet the criterion and agree to be in this study. If at any time you wish to stop participating, please let us know.

Thank you again for helping with our research!

APPENDIX B: ITEMS USED IN EACH SCALE

Table B.1. Items Used in Each Scale

Scale	Items
Severity (Witte et al., 1996)	1. I believe that natural disasters are severe. 2. I believe that natural disasters are serious. 3. I believe that natural disasters are significant to my life.
Susceptibility (Witte et al., 1996)	1. I am at risk for natural disasters. 2. It is likely that a natural disaster will occur in my area 3. It is possible that I will experience a natural disaster.
Response-Efficacy (Witte et al., 1996)	1. Preparing emergency supplies in advance is effective in preventing the impact of natural disasters. 2. Preparing emergency supplies in advance work in preventing the impact of natural disasters. 3. If I prepare supplies in advance, I am less likely to be harmed by natural disasters.

Table B.1, continued

Self-Efficacy (Witte et al., 1996)	1. I believe I am able to prepare for natural disasters. 2. I believe I have the ability to prepare for natural disasters. 3. I believe I can easily prepare for natural disasters.
Community-Efficacy (Witte et al., 1996; Heath & Lee, 2016)	1. I believe others in my community are able to prepare for natural disasters. 2. I believe others in my community have the ability to prepare for natural disasters. 3. I believe others in my community can easily prepare for natural disasters. 4. Safeguards are in place to prevent natural disasters from harming my community. 5. If a natural disaster would occur nearby, others in my community are prepared to respond properly.

Table B.1, continued

Pre-Event Disaster Communication (Spialek & Houston, 2018)	1. I've looked for information about the likelihood of a disaster occurring in my community. 2. I have talked to someone about what to expect if a disaster occurs. 3. I've looked for information about where to store a home disaster kit. 4. I've looked for information about what supplies to include in a home disaster kit. 5. I've looked for information about what to expect if a disaster occurs. 6. I've looked for information about how to prepare for a disaster. 7. I've talked with someone about the likelihood of a disaster occurring in my community. 8. I've talked with someone about how to prepare for a disaster. 9. I've talked with someone about the serious risk of a disaster. 10. I've talked with someone about ways to make my residence safe if a disaster occurs.

Table B.1, continued

	11. I've encouraged someone to make copies of important documents. 12. I've encouraged someone to know what to do with their pets in the event of a disaster.
Community Resilience Domain of Disaster Management (Pfefferbaum et al., 2015)	1. My community tries to prevent disasters. 2. My community actively prepares for future disasters. 3. My community can provide emergency services during a disaster. 4. My community has services and programs to help people after a disaster.
Community Resilience Domain of Information and Communication (Pfefferbaum et al., 2015)	1. My community keeps people informed about issues that are relevant to them. 2. If a disaster occurs, my community provides information about what to do. 3. I get information through my community to help manage disasters. 4. People in my community trust each other.

Table B.1, continued

Community Identification (Scott & Stephens, 2009)	1. I feel like I have a lot in common with my community. 2. My values and my community's values are very similar. 3. I find it easy to identify with members of my community. 4. I view my community's problems similar to my own problems. 5. I feel limited by the actions of my community (reverse-coded).
Intention to Prepare (Fishbein & Ajzen, 2010)	1. I expect I will prepare for natural disasters. 2. I want to prepare for natural disasters. 3. I intend to prepare for natural disasters.
Natural Disaster Experience (Weber et al., 2018) *Note.* Response choices were: 'Yes' and 'No'	*Which of the following emergency situations have you personally experienced (i.e., you were directly affected by the experience)? Check the following:* 1. Fire 2. Flood 3. Tornado 4. Earthquake

Table B.1, continued

	5. Hurricane/tsunami 6. Ice storm/blizzard 7. Mud slide 8. Other: Please indicate_____ None of the above
Current Household Preparedness (American Red Cross, 2020) *Note.* Response choices were: 'Yes' and 'No'	*Please place a check mark next to any items listed below that you have prepared in your household.* 1. Three-day supply of water (one gallon per person, per day) and non-perishable food for all members of household (3-day supply) 2. First aid kit and sanitation supplies 3. Flashlight and extra batteries 4. An extra set of car keys, credit cards, cash, or traveler's checks 5. Important documents and contact numbers, including insurance documents 6. Map marked with evacuation routes 7. Easily carried valuables and irreplaceable items 8. Battery-powered radio 9. A pair of old shoes

Table B.1, continued

Current Household Preparedness: Optional Items (American Red Cross, 2020) *Note.* Response choices were: 'Item Prepared', 'Item Not Prepared' and 'Item Not Applicable to Me'	*Have you prepared any of these items?* 1. Extra eyeglasses, and/contact lenses 2. Prescriptions, and medications 3. Personal electronic devices and chargers
Community Organization Membership (Stephens et al., 2004)	*What community groups are you part of in your residence?* 1. _____ 2. _____ 3. _____ 4. _____ 5. _____

Note. Unless otherwise specified, all questions were asked using a seven-point, Likert-type scale (1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Disagree, 4 = Neither Disagree nor Agree, 5 = Somewhat Agree, 6 = Agree, 7 = Strongly Agree).

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Vita

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