

ARE WE JUST GUESSING? AN EXPLORATORY STUDY OF MINNESOTA EMERGENCY
MANAGERS' PERCEPTIONS OF CITIZEN PREPAREDNESS

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ABSTRACT

Emergency management research suggests that citizen preparedness is paramount to household survival in disasters. Thus, having a citizenry that is well prepared is ideal for individuals who work directly in emergency management and disaster response roles. At the lowest governmental level, it is the local emergency manager who is tasked with the job of promoting preparedness to their respective jurisdictions. However, to effectively promote preparedness to citizens, it is presumed that an emergency manager would need a fairly accurate perception of citizen preparedness. However, emergency managers rarely have data to determine their jurisdiction's level of preparedness. Without data to inform a perception, how does an emergency manager determine the preparedness of his or her jurisdiction? This study explores two possible cognitive heuristics that could play a role in how county-level emergency managers form their perceptions of preparedness; the availability heuristic and the false consensus effect.

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CHAPTER ONE: INTRODUCTION

The empirical literature in emergency management research consistently suggests that household preparedness is vital to household survival in disasters (Federal Emergency Management Agency, 2004; Paton, McClure, & Burgelt, 2006; Tierney, Lindell & Perry, 2001). Thus, promoting preparedness is a key dimension of the local emergency manager's job. Presumably, an effective effort to promote preparedness requires an accurate perception of citizen preparedness. However, emergency managers rarely have data (e.g. survey results) to determine their jurisdiction's level of preparedness. Little or no research has been conducted to determine how emergency managers form their perceptions of citizen preparedness levels in the face of this uncertainty. Unfortunately, social psychological research on perception has identified a wide variety of factors that can bias perceptions including the use of a variety of cognitive heuristics to fill the gaps of missing information. This study will initiate research on emergency managers' perceptions by examining the role of two closely related cognitive biases in social psychology; the availability heuristic and the false consensus effect. Hypotheses are stated and tested concerning the role of these heuristics in emergency managers' perceptions of their citizens' level of preparedness. Support for these hypotheses would suggest the need for emergency managers to be alert to possible bias in their perceptions and highlight the need for the research community to further explore the role of these heuristics and others in emergency managers' perceptions. Finally, if perceptions are subject to systematic biases, further research will need to explore the extent to which such biases ultimately affect the accuracy of emergency managers' perceptions. Are perceptions of preparedness just guesses that are only accurate by chance?

This research begins with a focus on how two classic perception biases, the availability heuristic and false consensus effect, may impact how emergency managers form their perceptions. The goal of this research is to explore which factors impact emergency managers' perceptions of citizen preparedness beyond the reality of actual citizen preparedness levels. In other words, how much of an impact, if any, do such widely spread perceptual biases as the availability heuristic and the false consensus effect have on the perception of the overall level of citizen preparedness within an emergency manager's jurisdiction?

In addition to examining the role of known cognitive heuristics such as the availability heuristic and false consensus effect in emergency managers' perceptions, this study explores two additional sets of perceptions pertinent to effective preparedness promotion efforts. First, considerable research (Brilly & Pollic, 2005; Grothmann & Reusswig, 2006; Kirschenbaum, 2005; Lindell & Hwang, 2008; Lindell & Whitney, 2000; Miceli, Sotgiu, & Settanni, 2007; Mishar & Saur, 2007; Paton, McClure, & Burgelt, 2006; Siegrist & Gutscher, 2006;) suggests that preparedness is a product, at least in part, of risk perceptions. Thus, if an emergency manager is going to understand variability in citizen preparedness then he or she should have an accurate sense of citizen risk perception. Unfortunately, the same perceptual biases noted earlier as confounding factors in emergency managers' perception of citizen preparedness may also impact perceptions of citizen risk perceptions.

Second, a similar logic suggests that an emergency manager should also be cognizant of what socio-demographic factors are likely to impact citizens' preparedness levels. Thus, included in this study's survey of emergency managers' perceptions will be a series of questions asking them to identify socio-demographic factors as relevant or not to citizen preparedness. The test of accuracy will be a comparison of emergency managers' answers to research based

answers. While this “test” is not a direct assessment of the accuracy of emergency managers’ perceptions of their jurisdictions preparedness level, it does offer a preliminary assessment of emergency managers’ awareness of factors affecting citizen preparedness. Thus, this study examines the cognitive heuristics that may impact both emergency managers’ perceptions of citizen preparedness, citizen risk awareness perceptions and the emergency managers’ knowledge of the socio-demographic factors that affect citizens’ preparedness levels.

Thesis Overview

Chapter 2 reviews the empirical literature on individual and household preparedness and the most salient indicators of individual preparedness. This chapter will also discuss prior research on emergency managers’ perceptions of preparedness and will justify the importance of the present research. There will also be an overview of two classic heuristics that may be affecting how emergency managers form their perceptions of citizen preparedness. The heuristics are the availability heuristic and the false consensus effect. These heuristics lead to this study’s hypotheses. Chapter 3 explains the research design and the data collection process, and the anticipated results of the study. Chapter 4 explains the results of the research study. Finally, Chapter 5 discusses the implications of the results and future research needs.

CHAPTER TWO: LITERATURE REVIEW

Introduction

In the field of emergency management, there is a strong focus on individual and family preparedness. Preparedness is viewed as the individual citizens' first line of defense against the effects of a disaster. Currently, the federal government relies largely on local emergency managers to assist in the process of encouraging individuals to become prepared (Presidential Policy Directive - 8). Therefore it is critical to assess how emergency managers' are constructing their perceptions of the overall preparedness levels of their jurisdictions.

Accurately assessing the overall preparedness level of sizable jurisdictions such as large cities or counties is a challenging assignment. A variety of factors affect actual preparedness. As jurisdictions differ in their characteristics, their overall preparedness is likely to differ as well. In addition, research on perceptions in social psychology clearly demonstrates that perceptions can be affected by cognitive biases that threaten perceptual accuracy. Thus, while the importance of understanding how emergency managers assess preparedness is clear, little attention has been given to this question. This study explores the relevance to emergency manager's assessments of two cognitive heuristics, the availability heuristic and the false consensus effect. Both have received attention in social psychology and professional fields such as medicine (Croskerry, 2002; Croskerry, 2003; Croskerry, 2005), criminal justice (Green & Ellis, 2007), and risk communications (Keller, Siegrist & Gutscher, 2006; Finuace, Alhakami, Slovic & Johnson, 2000; Johnson & Tversky, 1983). While the focus of the this study will be on perceptions of preparedness, it will also pursue the role of these heuristics in a second perceptual challenge focusing on emergency managers' jurisdictions citizen risk awareness levels. This

second effort serves as an additional test of the relevance of these heuristics to emergency managers' perceptions of their citizens.

The following literature review will first attempt to explain what researchers assert are the characteristics of preparedness, the basic activities that are suggested for preparing for disasters, the factors that are most likely to prompt the adoption of preparedness activities, and the challenges emergency managers face in assessing preparedness. Second, prior research on emergency managers' perceptions of citizen preparedness will be discussed. Despite the importance of perceptual accuracy, little has been done to understand how emergency managers' assess their jurisdictions' level of individual preparedness given the absence in most cases, of concrete data on preparedness. Challenges associated with determining actual accuracy will be discussed. Third, the potential effects of the availability heuristic and false consensus effect on perceptions of citizen preparedness will be discussed. These three sections will set the stage for predictions about emergency manager's possible perceptions and the expected role of cognitive biases in impacting these perceptions.

Characteristics of Preparedness

Citizen preparedness is a seemingly simple concept that actually can be difficult to define as a clear and a consistent definition of preparedness is absent from the literature. A general definition of preparedness is performing activities in advance of a hazard event in an attempt to minimize its effects and decrease the amount of time for recovery (Federal Emergency Management Agency, 2004). According to Sutton and Tierney (2006) and echoed by numerous governmental, international, and non-profit organizations (American Red Cross, World Health Organization, Federal Emergency Management Agency), individual and household preparedness activities include: "developing a planning process to ensure readiness, formulating disaster plans,

stockpiling resources necessary for effective response, and developing skills and competencies to ensure effective performance of disaster-related tasks” (p. 3). Sutton and Tierney’s definition of preparedness has been condensed by the Federal Emergency Management Agency (FEMA, 2014). FEMA promotes preparedness as a three step process in its Ready campaign: “get a kit, make a plan, and be informed” (Ready.gov, 2014). FEMA’s three step process can be viewed as a simplified, more user friendly version of the same principles stated by Sutton and Tierney.

FEMA explains in its publication “Are You Ready: An In-depth Guide to Citizen Preparedness” that for an individual to become better prepared, he or she should complete a short risk assessment to learn about risks, review insurance policies, develop a plan of action, and assemble an emergency kit. The publication also recommends that a basic emergency kit contain the following: a three-day supply of food and water, a battery-powered radio, a flashlight, first aid kit, sanitation items, matches, a whistle, extra clothing, kitchen utensils and supplies, photocopies of important documents, cash, and special needs items (p. 35). The recommendations made by FEMA are common throughout the preparedness literature and for the purposes of this research will be used as a baseline for defining the activities associated with preparedness.

How is Preparedness Assessed?

Measuring citizen preparedness is challenging. This is predominately because, the literature is lacking a concrete definition of preparedness, and thus there are varying methods for assessing the multiple definitions. One method used by researchers to assess preparedness, which is the focus of this study, is by using disaster preparedness checklists. The checklists reflect Sutton and Tierney’s (2006) and other researchers (Andrews, 2001; Kapucu, 2008; Perman, Shoaf, Kourouyan, & Kelly, 2011; Tierney, Lindell, & Perry, 2001) argument that one of the

steps to becoming prepared is to stockpile necessary resources to use during a disaster. FEMA has a checklist that has been widely publicized through their “Are You Ready” campaign. The same list was utilized for their multiple surveys (2005, 2007, 2009, and 2012) of nation-wide citizen preparedness.

Although there are inherent issues relative to the checklist approach such as bias in self-reported data and differing interpretations of items contained in the checklist, the method seems to be the most widely used tool for assessing preparedness (in terms of supplies), and therefore was utilized for this study. Several considerations are behind this decision. First, this method fits into the extensive literature already using this approach. Second, the method was utilized by FEMA four times in nation-wide random sample surveys and its use serves as a reference for this study. Third, the knowledge “test” in this study reflects the findings in the FEMA surveys concerning socio-demographic factors that consistently affect preparedness (as measured by the checklist approach).

An additional method to assessing preparedness is by addressing citizen risk awareness. For example, Paton (2003) argues that preparedness can only be achieved when individual risk awareness increases to a level that the individual feels a need to prepare. However, a method for assessing when an individual reaches the preparedness “tipping-point” was not mentioned. Still, this argument suggests that emergency managers’ perceptions of their citizens’ risk awareness are relevant to preparedness and this study will measure such perceptions.

Finally, the use of the same checklist in this study as used in the FEMA surveys provides a reference point for understanding how the perceptions of emergency managers in this study compare to self-reported citizens preparedness nationwide. This study is limited to studying emergency managers in one state, Minnesota. To the author’s knowledge, little data exists on

self-reported citizen preparedness in Minnesota. The North Dakota State Data Center (2007) conducted the only study known to the author with recent preparedness data on Minnesota. The North Dakota State Data Center research explored healthcare behaviors and emergency preparedness actions of individuals in an eight county region. Both the FEMA and the North Dakota State Data Center surveys contained questions to collect data on how well individuals feel they are prepared, the perceived level of risk their community faces specific to the occurrence of an emergency or disaster, and the barriers that prevent an individual from preparing. The results of the two studies are similar. Thus these results provide a reference point for interpreting Minnesota emergency managers' perceptions of citizen preparedness.

How Prepared Are Citizens?

The following section will highlight the results of both the Citizen Corps study of citizen preparedness (2009) and the North Dakota State Data Center (2007) study of citizen preparedness in west central Minnesota. Both of these surveys address self-reported citizen preparedness.

First, the study conducted by the Citizen Corps in 2009 indicates that 35 percent of individuals perceive themselves as prepared and have been for at least the past six months. Sixteen percent of individuals have recently begun preparing, and nine percent have not begun preparing, but intend to do so within the next month (pg. 33). Identical surveys were also conducted in 2005, 2007 and 2012 (the latter only becoming available as this study was in progress). The percentage data across all four surveys were very similar. Thus, the nationwide data appears quite stable.

Second, research by the North Dakota State Data Center (2007) indicate on a 5-point scale (1="not at all prepared" to 5="very prepared") that 32 percent of individuals rated

themselves as “more prepared than not prepared” (3); 26 percent of individuals rated themselves as “prepared” (4); and 14 percent of individuals feel they are “very prepared” (5).

There are major similarities between the overall citizen preparedness level collected by FEMA (2009) and the North Dakota State Data Center (2007). According to FEMA (2009), 35 percent of individuals perceive themselves to be prepared based on self-assessed data (pg. 33) and according to the North Dakota State Data Center (2007) roughly 40 percent self-assessed as being prepared (combining those rating “prepared” and “very prepared”). Thus, the results reported in the North Dakota State Data Center (2007) suggest that the FEMA (2009) data results are likely to be similar to actual self-assessed preparedness levels in Minnesota should a checklist survey be done specifically in that state. Thus, the FEMA (2009) data will be used as a best estimate of Minnesota citizens’ preparedness statewide. The combination of these two studies has created a rough but reasonable estimate of citizen preparedness for Minnesota. This can be utilized as a comparison for the purposes of this study when Minnesota’s emergency managers are asked for their perceptions of citizen preparedness.

What Affects Preparedness?

As mentioned, defining the exact activities that constitute preparedness is somewhat difficult, and determining the factors that most influence preparedness is equally so. According to Paton, McClure, and Burgelt (2006), the act of preparing is the end result of a cognitive process that takes into account many different variables. Paton et. al. (2006) explain that there are a number of cognitive stages before an individual will adopt a preparedness measure. The study indicates the first stage is a motivating factor (i.e. an increase in perceived risk). The second stage is forming an intention to prepare, based on critical awareness, preparedness outcome expectancy, and the salience of the hazard. The third and final stage is “converting

intention to preparedness” (p. 120). Movement from one stage to the next is not automatic, and there are numerous opportunities for failure within the cognitive preparedness process.

Paton et. al.’s findings suggest that in order to understand citizen preparedness it is important to first understand risk perception. However, overall research on the role risk perception plays in preparedness is inconclusive. Grothmann and Reusswig (2006), Lindell and Whitney (2000), Siegrist and Gutscher (2006), and Brilly and Pollic (2005) assert that an increased level of risk perception does not correlate with an increased level of preparedness. Furthermore, Miceli et. al. (2007), Mishar and Saur (2007), and Kirschenbaum (2005) conclude that risk perceptions have an impact but only have a partial impact on prompting risk reduction activities and suggest that other variables may be involved in the decision making process. However, Lindell and Hwang (2008) concluded that perceived personal risk relates positively with risk reduction efforts (e.g., preparedness). These findings are the only ones that are entirely congruent with Paton et. al.. (2006).

Thus, if risk perception is not a clear predictor of preparedness, what factors do predict preparedness? These indicators include both ascribed and achieved attributes of the potential preparer. According to the FEMA National Survey, “Personal Preparedness in America” (2009), the attributes of age, education, employment and household income are all predictors of potential preparedness. The survey results state that individuals between the ages of 18 and 54 are more likely to be prepared and to rely less on emergency responders during and after an incident for assistance (p. 20). Individuals who have less than a high school education are less likely to prepare and cite their lack of knowledge of needing to prepare as a factor (p. 20). Retired individuals were cited as less likely to prepare versus non-retired individuals (p. 20). Lastly, households with an income of \$25,000 or more were more likely to have food, water, and

supplies set aside (p. 8). Because the FEMA study used a national sample obtained through random-digit dialing (n = 4,461), the predictors of preparedness can be generalized to the entire nation which presumably includes the state of relevance to this study, Minnesota.

Why Do People Prepare?

As previously discussed, risk perceptions also can play a significant role in initiating the preparedness process. While examining preparedness levels, both FEMA (2009) and the North Dakota State Data Center (2007) addressed citizen risk perceptions by asking citizens about the likelihood of a disaster occurring in their community. FEMA (2009) found that citizens perceive the likelihood of different types of disasters occurring in their community as follows: natural disaster (37%), chemical spills/hazardous materials accident (22%), disease outbreak (20%), and act of terrorism (19%) (p. 25). Similarly, the North Dakota State Data Center (2007) found that citizen perceptions for disaster likelihood are as follows: natural disasters (23%), chemical spills/hazardous materials accident (12%), disease outbreak (23%), and act of terrorism (31%) (p. 36). Both the data found by FEMA and the Minnesota specific data on perceptions of risk were similar with the largest difference in perceived risk for natural disaster (only a 14% different, 37% vs 23%). Overall, these studies suggest that the United States and Minnesota citizens see some likelihood of any given event occurring within their community. This level of risk perception is modest but it should be substantial enough to trigger a meaningful level of preparedness across the jurisdiction.

FEMA (2009) also found that confidence in their knowledge and abilities to actively prepare is vital. Of respondents, 61 percent viewed themselves as competent enough to adequately prepare and 14 percent perceived themselves as not at all confident in their own

abilities (p. 31). FEMA found that increased confidence was related to higher education, increased income levels, and past volunteerism in disaster response.

FEMA (2009) and the North Dakota State Data Center (2007) also sought to determine the most prevalent barriers to preparedness. Results reported by FEMA (2009) indicated that 29 percent of respondents possessed the belief that emergency responders would be available to assist during a disaster (p. 19). Other barriers for preparedness include lack of knowledge (24%), and lack of time (26%) (p. 19). Additionally, it was noted that citizens aged 55 and older are significantly more likely to rely on emergency responders than were younger individuals (p. 20). Similarly, the North Dakota State Data Center (2007) reported significant preparedness barriers as lack of knowledge (20.8%), lack of time (29.2%) and lack of importance (28.1%) (p.41). Nationally and locally, roughly a quarter of citizens perceived obstacles to preparedness.

Thus, according to FEMA (2009), a barrier to individual preparedness is the way that the public perceives both the utility and effectiveness of their own actions and their confidence in their own competency to know how to prepare. Logically, if an individual does not see any utility in preparing for emergencies/disasters the person is not likely to complete any preparations. FEMA (2009) noted that 82 percent of respondents saw utility in completing preparedness actions for natural disasters (p. 28). However, less utility was reported relative to preparing for terrorism, hazardous materials accidents, and disease outbreaks (p. 28). Thus, it is clear that the majority of the respondents viewed preparedness as a positive action, but many were still skeptical of its effectiveness for individual threats.

Why Does All of This Matter?

A baseline understanding of the mental process of preparing, the factors that affect preparedness and the barriers to citizen preparedness are information that an emergency manager needs in order to assess the preparedness level of the citizens in their jurisdiction. Unfortunately, such information is difficult to learn for a jurisdiction the size of a county. Nevertheless, promoting preparedness activities is a goal that the state and federal government set forth for jurisdictions (Presidential Policy Directive 8). Thus, emergency managers should have an awareness of the level of individual and household preparedness in their jurisdictions. If this awareness or perception is biased, an emergency manager may not be addressing the areas of preparedness that are most needed or reaching the groups that are most in need of attention. Research on this subject is vital to determine how emergency managers perceive preparedness and what factors affect emergency managers' perceptions. However, there is little research specific to emergency managers on how they form their perceptions. The first goal of this study is to address this in the research literature.

The nature of the challenge for emergency managers is decision making in the face of great uncertainty. Recent research in social psychology suggests that decision making in the face of uncertainty is often a product of a wide variety of cognitive heuristics. In the absence of concrete information, research in social psychology suggests that we fill our information gaps using cognitive shortcuts. Furthermore, the greater the uncertainty, the greater the effects of cognitive biases are likely to be (Ross, Green, & House, 1977 and Tversky & Kahneman, 1973). The implication is clear. Emergency managers may unintentionally base their estimates of citizen preparedness in their jurisdiction using various cognitive shortcuts. Thus, this study turns to a considerable body of social psychological research on perception to address this question.

As many as 30 cognitive heuristics have been identified but the shortcut that has received more attention than most is the availability heuristic. The impact of this heuristic has been explored in medicine (Croskerry, 2002; Croskerry, 2003; Croskerry, 2005; Groopman, 2007; and Redelmeier, 2005), criminal justice (Greene & Ellis, 2007), and risk awareness (Pidot, 2013; Richard-Eiser, Burton, Johnston, McClure, Paton, van der Pligt & White, 2012) and in citizen perceptions of risk in the emergency management literature. I argue that emergency managers, themselves, are likely to use the availability shortcut along with a second shortcut called the false consensus effect. For example, emergency managers may project their sense of their own behavior and/or that of immediately available associates on to the rest of society as a basis for estimating what is happening in the larger population. Specifically, I argue that emergency managers base their assessment on their own preparedness actions (the false consensus effect) and/or the actions of those around them including family, friends, and acquaintances (the availability heuristic). The next section introduces both heuristics and will explore the implications that these heuristics may have for emergency managers' perceptions.

Everybody's Doing it, Right?

A frequent argument made by children with their parents is that they, the children, should be allowed to engage in a behavior because "everybody else is doing it". A typical response from parents is to correct this perception with illustrations that everybody is not doing it (or at least should not be). Literature on social perception from social psychology suggests that we still misperceive what "everybody" is doing as adults based on what we perceive our associates, friends, and family to be doing.

Two perceptual processes encourage the projection of perceptions of our immediate social reality onto a larger stage, the "everybody stage." These biases are the false consensus

effect and the availability heuristic. The false consensus effect suggests that individuals perceive the choices and beliefs of others to be similar to their own. Ross, Green, and House (1977) describe the bias as people seeing that “their own behavioral choices and judgments are relatively common and appropriate to existing circumstances while viewing alternative responses as uncommon, deviant, or inappropriate” (p. 280). In the context of this study, this would indicate that the more prepared an individual is, the more prepared he or she is likely to think those around them to be (Alicke & Largo, 1995; Dawes, 1989; Gilovich, 1990; Krueger & Clement, 1994). In essence, they would be thinking “I do it, so everyone must be doing it too, right?” To explore this effect in this study, emergency manager’s completed a checklist of their own personal preparedness efforts and the results were compared to their estimates of citizen preparedness using the same checklist.

The availability heuristic involves a similar shortcut process. According to Tversky and Kahneman (1973) “a person is said to employ the availability heuristic whenever he estimates frequency or probability by the ease with which instances or associations could be brought to mind” (pg. 208). Relative to this study, the availability heuristic suggests that a person is likely to assume that the behavior of one’s friends and family (i.e. information that is most readily available) provides a reasonable basis for judgments about what everyone else is doing. The difference to note between the false consensus effect and the availability heuristic is that the false consensus effect is based on an internal judgment of one’s own actions being projected onto others and the availability heuristic is based on ease of recall of the activity of others (Folkes, 1988; Macleod & Campbell, 1992; Rothman, 1997; Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simmons, 1991; Schwarz & Vaughn, 2002).

Considerable research already exists in emergency management that has documented the use of the availability heuristic in citizens' perceptions of risk. Research suggests that risk is largely interpreted through the use of cognitive heuristics and mental short-cuts to deduce the probability of the event personally affecting them (Berger, Kousky, & Zeckhauser, 2008; McClure, Doyle, & Vellupillai, 2014; Uscher-Pines, Chandra, Acosta, & Kellermann, 2012). This study shifts the focus from citizens to emergency managers and expands the study of heuristics in emergency management to include the false consensus effect and a focus of perceived preparedness.

The availability heuristic has also been explored in numerous other professions. Specifically, Croskerry (2002) found that in the medical field, heuristics "provide short cuts in problem solving and clinical decision making, which for the majority of cases work well. When they succeed, we describe them as economical, resourceful, and effective, and when they fail, we refer to them as cognitive biases" (pg. 1201). Relative to the field of criminal justice, Green & Ellis (2007), specific to members of a jury; "if the juror had been exposed to some kind of pretrial information about the event in question, it may be highly accessible in memory and thus, seem particularly memorable. Hence, the ease with which this event (or precise details about the event that may be important in assessing guilt) can be recalled from memory may be completely unrelated to its likelihood" (pg. 186). Specific to risk communications, it was found that the more information an individual received about a hazard, the more risk is perceived for a given hazard (Keller, Siegrist & Gutscher, 2006). Additionally, when under a time constraint there was a greater reliance on cognitive heuristics (Finuace, Alhakami, Slovic, & Johnson, 2000). Finally, when emotional events were added to the scenario, the estimated frequency of a given event increases (Johnson & Tversky, 1983). Thus, there is considerable research in social psychology

supporting the existence of this shortcut; it has been seen as relevant to the decision making of professionals in a variety of disciplines; and its role in citizen decision making with respect to risk has been examined. What is missing is an empirical test of the role of this heuristic for emergency managers facing uncertainty during the decision making process. This study examines the impact of heuristics (availability and false consensus effect) on the emergency managers' perceptions of the citizens in their jurisdiction. Documenting the use of cognitive shortcuts is important for the field. Unfortunately, while shortcuts may lead to the correct perception, they may also misguide perceivers.

To complicate the issue of misguided perceptions of an emergency manager relative to the preparedness level of their jurisdiction, there is research that suggests that citizens overestimate their own preparedness and are in fact underprepared. Research suggests that although emergency managers can promote preparedness activities in their jurisdiction, it really does not affect whether or not the individual becomes more prepared (Donahue, Eckel, & Wilson, 2014). If this is the case, the issue of emergency managers being able to reasonably estimate the preparedness of their jurisdiction becomes increasingly complicated. However, research relative to both individuals' and professionals' perceptions of risk awareness do align, Siegrist, M. & Gutscher, H., (2006), state that "respondents' risk perceptions were correlated with experts' risk assessments" and that the findings of their study suggest the presence of the availability heuristic among citizens (pg. 971). Combined, these findings support Paton et. al (2006), that the act of becoming prepared is a multi-step process that begins with risk awareness, however there are many chances for failure throughout the process. This leads to one question that this study may be able to answer and that is are perceptions of risk awareness formed differently than perceptions of preparedness?

To explore the availability heuristic emergency manager's were asked about the preparedness of their acquaintances (e.g., friends and family members), and these data were correlated with emergency managers' perceptions of their jurisdiction to assess the similarity of these two perceptions. To explore the false consensus effect, emergency managers were asked about their own level of preparedness and these data were correlated with emergency managers' perceptions of their jurisdictions. Both "correlations" were done while controlling on a number of other factors to be discussed later. Combined, these perceptual processes suggest that our perceptions of "everybody" are often subconsciously affected by our own actions and by those around us. In other words, these processes, if apparent, suggest that emergency managers' perceptions of their citizens reflect data from sources other than citizens themselves (i.e., perceptions of friends and family and/or perceptions of self). Emergency managers' perceptions of "everyone" could easily be inaccurate. If those around us or the emergency managers themselves are really a perfect reflection of the "everybody," this subconscious process will not lead us astray. But, the process is not based on a systematic collection of data on what everyone really is doing, so in those instances when one's immediate circle of associates, friends, and family does not reflect everyone, then our perceptions of everyone will be inaccurate. For those making policy, implementing policy, and/or allocating resources based on assumptions about what everyone is doing, the gap between one's own behavior and/or one's immediate circle versus everyone else can lead to serious errors.

Thus, to account for the presence of either the availability heuristic or the false consensus effect, it was necessary to first determine a self-assessed level of preparedness for the emergency manager and then the emergency manager's perception of the preparedness level of those with whom they interact (i.e. friends, family and relatives). These two sets of assessments were then

examined relative to the emergency manager's perceptions of county-wide preparedness. The similarity of the first two assessments with emergency managers' jurisdictional assessment addressed the presence of these cognitive biases. The predicted outcomes of this study are stated below.

Predictions

False Consensus Hypothesis: Emergency managers' self-reports of their own risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their county citizen risk awareness level and preparedness level, respectively.

Availability Hypothesis: Emergency managers' perceptions of their friends and family risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their county citizen risk awareness and preparedness level, respectively.

In addition to the expected role of cognitive biases, this study explored the extent to which emergency manager's perceptions are affected by individual demographics (i.e. emergency management experience, office structure characteristics, and office-related activities). For example, emergency management experience might affect perceptions of citizen preparedness if more experience consistently leads to less optimistic expectations for citizen preparedness. Such a pattern may exist with increased experience whether the more negative perceptions are accurate or not. Experience may decrease a sense of uncertainty about their jurisdictions and reduce emergency manager reliance on cognitive heuristics when making a judgement. Each demographic category will be explained in detail in the next chapter.

Finally, this study includes a proxy reality test. While this study does not include county-level surveys of citizen preparedness to directly check the accuracy of emergency managers' perceptions, prior research (FEMA, 2009) has repeatedly shown correlations between a variety

of population demographics (e.g., age, education, and income) and preparedness thus allowing this study to determine the impact of these census characteristics on emergency managers' perceptions. To account for this, the fore mentioned demographic factors were obtained from the US Census Bureau for each responding county and controlled for during the analyses. The demographic factors that were controlled represent the percent of the population in each of the demographic categories that were said to be the least prepared according to the earlier discussed FEMA surveys. Presumably, variability in county-level demographics should lead to variations in preparedness perceptions if indeed perceptions are accurate and unbiased. It should be noted, that the study did not determine emergency managers individual exposure to the FEMA preparedness surveys or preparedness literature thus, this proxy reality test is merely exploratory.

Finally, the emergency manager's own demographic data (experience, office structure, and office related activities) were used as controls to remove variability in the emergency manager's perceptions prior to assessing the role of cognitive biases.

Replication

This study included measures of risk awareness perceptions as well as citizen preparedness perceptions. The risk awareness perception measures included the emergency manager's own risk awareness, his or her perception of the risk awareness level of friends and family and the emergency managers' perceptions of citizen risk awareness. The latter perceptions were compared to identical data from the previously mentioned national survey. Thus, the very same analysis was able to be done on risk awareness as earlier described for citizen preparedness. While the emergency manager's perceptions of their citizens is not a focus of this study, doing this additional analysis will be a means of replicating the study internal to itself through comparing the results of these two dependent variables, risk awareness, and

examining the extent to which the availability and false consensus heuristics appear to impact both sets of perceptions.

Conclusion

As previously stated, an effective effort to promote preparedness requires both an accurate perception of citizen preparedness and an understanding of the socio-demographic factors that affect citizen preparedness. Yet, little research has been conducted to determine what factors and to what extent emergency managers perceptions of citizen preparedness and/or risk awareness are affected by such biases. This study has conducted research on the formation of emergency managers' perceptions of citizen preparedness by examining the role of two closely related cognitive biases in social psychology: the availability heuristic and the false consensus effect. Thus, this research examines the extent to which emergency managers' perceptions of citizen preparedness are actually a product of limited, immediately available information (e.g. emergency managers' perception of their friends and family members preparedness and/or emergency managers' self-perceptions), rather than actual citizen preparedness levels.

CHAPTER THREE: METHODS

This chapter explains the methodology for this research. The chapter is composed of seven sections, which cover the following topics: the study's population, the unit of analysis, how the data were collected, survey design; measures, potential limitations of the research, and lastly an overview of data analysis.

Unit of Analysis

The unit of analysis for this study is the county emergency manager in the state of Minnesota. Minnesota was selected because the researcher, herself, is a county emergency manager in Minnesota, and it was hoped that this connection would enhance the response rate to the study. The focus of the study is to determine to what extent cognitive biases (Availability Heuristics and False Consensus Effect) affect the formation of emergency managers' perceptions of preparedness and risk awareness for their respective jurisdictions. Due to the fact that the majority of the 87 counties in Minnesota rely on the county emergency manager to promote preparedness activities it is important to assess how county emergency managers are determining the "actual" level of county-wide citizen preparedness.

Population

The population for this study is a census of all 87 county emergency managers in the state of Minnesota, excluding the researcher's own county. Contact information for each county emergency manager was obtained from the Minnesota Department of Public Safety.

Procedures

The data collection method for this research was an internet-based survey. The survey was disseminated through the online survey tool, Survey Monkey. After obtaining the appropriate email addresses for each county emergency manager in the population and IRB

approval from the researcher's own university (North Dakota State University, see Appendix A), the following steps were taken to proceed with the data collection process.

Step One: Initial Contact

A research announcement letter was mailed to each Minnesota county emergency manager. The letter informed the recipient that he or she had been selected to participate in a survey on citizen preparedness (Appendix B). This initial contact letter contained additional information about the study (Appendix C) and a statement letting the potential participant know that he or she would receive a survey invitation via email within two weeks.

Step Two: Survey Invitation

Two weeks after the initial contact letter was mailed, a formal survey invitation was sent via email to all Minnesota county emergency managers (Appendix D). The survey invitation contained the same information that was disseminated in the initial contact letter in addition to survey instructions and the link to complete the survey.

Step Three: Invitation Follow-ups

Consistent with Dillman's (2009) advice on how to maximize response rates, one-week and then four weeks after the survey invitation was sent, a reminder email was sent along with the link to the survey (Appendix F).

Survey Design

The survey instrument was designed based on the FEMA (2009) survey *Personal Preparedness in America: Findings from the 2009 Citizen Corps National Survey* (Appendix E). This meant that question wording and response formats from the Citizen Corps survey were used in this study. However, format issues involved in presenting this survey in internet form were addressed following the recommendations of Dillman (2009). The recommendations were

followed to increase response rates and reduce survey error. The next section explains how the dependent and independent variables were measured. Additionally, the potential limitations of the study are also discussed.

Dependent Variable Measures

This research began with the collection of data on two sets of emergency managers' perceptions which included their perceptions of citizen risk awareness and perceptions of citizen preparedness. These measures generally paralleled similar measures as the FEMA's Citizen Corps survey (2009) however the preparedness and risk awareness questions in the Citizen Corps survey asked citizens to self-report their preparedness and risk awareness while this study not only asked emergency managers to self-report but also used similarly worded questions that asked emergency managers how they perceive other's preparedness and risk awareness levels to be (i.e. emergency managers' immediate friends and acquaintances as well as the citizens in their respective jurisdictions).

Perceptions of Risk Awareness

Questions about risk awareness were asked three separate times. First, respondents were asked about their perceptions of citizens in the respondents' counties; second, respondents were asked about their perceptions of their friends and family members' risk awareness; and third, respondents were asked about their own risk awareness. In each case, questions about risk awareness focused on four risks: natural disasters, terrorism, hazardous materials, and disease outbreak. The first two sets of questions followed a very similar format. The lead-in for the questions asking emergency manager's their perceptions of their county's citizens asked, "please indicate the percentage of citizens in your county that would predict each of the following events to be likely or very likely to ever occur in your community" and the lead-in for the questions

asking emergency managers' their perceptions of their friends and family members' risk awareness asked, "please indicate the percentage of people you personally know (non-resident family members, relatives, friends, etc.) that would predict each of the following events to be likely or very likely to ever occur in your community". The response formats for these two sets of questions were identical. Following the listing of each of the four risks, the response format listed: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100%. Each of these two sets of questions were combined into an index by adding the scales for the four risks. Both sets of indexes proved to be highly reliable with Cronbach Alphas of .72 and .79, respectively.

Finally, a third risk awareness set of questions asked emergency managers about their own sense of risk for the same four risks. The lead-in for this set of questions asked, "please indicate how likely you believe each of the following events are to occur in your county. The response format ranged from "1" (Not at all likely) to "5" (Very likely to happen). Again, responses across the four risks were added to create an index and the Cronbach Alpha of .71 indicated that the index was reliable.

Perceptions of Preparedness

Similar to risk awareness, questions about preparedness were asked three separate times. First respondents were asked about their perceptions of citizens in their county; second, respondents were asked about their perceptions of their friends and family members' preparedness; and third, respondents were asked about their own preparedness. In each case, questions mirrored those on the 2009 FEMA survey questionnaire. The first two sets of questions followed a very similar format. The lead-in for the questions asking emergency managers' their perceptions of their county's citizens asked "please indicate the percentage of citizens in your jurisdiction that you feel have each of the following supplies reserved for a disaster/emergency"

and the lead-in for the questions asking emergency managers' their perceptions of their friends and family members' preparedness asked, "please indicate the percentage of people you personally know (family members, relatives friends, etc.) that you feel have each of the following supplies reserved for a disaster/emergency". The response formats for these two sets of questions were identical. Each question individually listed the following preparedness items and requested emergency manager's to indicate the percentage of citizens/friends and family that they believe possess each supply: bottled water, packaged food, flashlight, portable battery powered radio, batteries, first-aid kit, eyeglasses, medications, photocopies of personal identification, financial documents, and cash. Following the listing of the preparedness item, the response format listed: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, and 100%. Each of these two sets of questions were combined into an index (Table 1). Both sets of indexes proved to be highly reliable with Cronbach Alphas of .93 and .94, respectively.

Table 1. Cronbach Alpha reliability statistics for preparedness and risk awareness measures.

Measures	N	Cronbach's Alpha	M	SD
Preparedness Supplies				
Citizen	63	.93	30.80	11.91
Acquaintance	64	.94	37.20	12.28
Self	63	.56	0.68	0.19
Risk Awareness				
Citizen	66	.72	5.18	2.33
Acquaintance	65	.79	5.99	2.04
Self	66	.71	3.62	0.95

Note: Self-reported data in both the preparedness supplies and risk awareness categories are not based on a percent. Additionally, the index for self-reported preparedness supplies does not take into account responses for possessing a flashlight due to lack of variability as all emergency managers stating having one.

Finally, a third set of preparedness questions asked emergency managers about their own preparedness relative to the items asked in the 2009 FEMA survey questionnaire. The lead-in for this set of questions asked, "please indicate which of the following supplies you personally have reserved for a disaster/emergency" (Yes = 1, No = 0). Again, responses across the preparedness

items were added to create an index (Table 1). The Cronbach Alpha of .56 was disappointing. Generally, the hope is for Alphas of .70 or larger. Nevertheless, given the advisability of keeping all three indexes as similar as possible, this third index was kept. The main impact of this decision is to add some measurement noise to the correlations assessed later in the study.

Independent Variable Measures

Finally, emergency managers' perceptions of overall risk awareness and preparedness among their friends and family and emergency managers' data on their own risk awareness and preparedness were used to test whether the availability heuristic and false consensus effect affects emergency managers' perceptions of overall risk awareness and citizen preparedness in the county. The key questions to be addressed in the results are whether the availability hypothesis, the false consensus hypothesis or both are supported by the results.

Testing these hypotheses necessitates identifying plausible independent variables that need to be incorporated in the final analysis to isolate the predicted impact of the key independent variables associated with the hypotheses. This study included several blocks of independent variables including emergency managers' demographic characteristics, emergency managers' work experience, the structural characteristics of emergency managers' offices, the level of emergency managers' various work activities (e.g., hours spent promoting preparedness), and the demographic characteristics of the emergency managers' respective counties. With the exception of the last block of independent variables, testing these additional control variables is largely exploratory. The intent is to keep any independent variables that proved to be significantly related to either of the two hypothesized dependent variables and enter these significant variables as controls in multiple regressions analyses testing for the two heuristics.

County Emergency Manager Characteristics

Questions were asked to help determine if emergency manager characteristics and weekly time they devoted to promoting preparedness has an effect on perceptions of citizen risk awareness and preparedness. All of the following questions were asked at the conclusion of each survey.

Emergency Manager Demographics

To determine if individual demographic characteristics of an emergency manager predict their perceptions of citizen preparedness and/or risk awareness the following questions were asked: a) “How old are you?”(fill-in the blank); b) “What is your gender?” (female or male); c) “What is the highest level of education you have completed?” (less than 12th grade (no diploma), high school graduate or GED, some college but no degree, associate degree in college, bachelor’s degree, master’s degree, doctorate degree).

Emergency Manager Experience

To determine if years of experience as the emergency manager of their current county and/or years of experience in emergency management predict perceptions of citizen preparedness and/or risk awareness the following questions were asked: a) “How many years have you been employed as a county emergency manager?” (fill-in the blank); b) “How many years have you worked in the field of emergency management?” (less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 or more years); Additionally, to determine if specific experiences in their current jurisdiction effect perceptions the following question was asked: a) “Since you have been employed with your current county, has your jurisdiction experienced any presidentially declared disasters that were granted individual assistance?”(Yes, No).

Emergency Management Office Structure Characteristics

To determine if emergency manager position responsibilities and structure of individual emergency management offices predict perceptions of citizen preparedness and/or risk awareness the following questions were asked: a) “Do you have any other county positions or responsibilities in your county in addition to being the county emergency manager (e.g. sheriff, fire chief, county assessor, veterans administration, 9-1-1 dispatch, etcetera)?” (Yes, No, if Yes what additional position(s) are assigned to you; and b) “How many individuals are employed by your county government to do emergency management?” (1, 2, 3, 4 or more).

Emergency Management Office Related Activities

To test if the number of hours spent on emergency management related activities and/or the number of hours spent promoting citizen preparedness predicts perceptions of citizen preparedness and/or risk awareness the following questions were asked: a) “In your current position, how many hours per week are spent on emergency management activities” (fill-in the blank); b) “In your current position, how many hours per week are spent on promoting individual and household preparedness activities?”(fill-in the blank).

Variability in County Demographics

Lastly, only one research question (i.e., research question 5 to be described later in the results section) concerning the block of control variables measuring variances in county demographic characteristics has a strong basis for making a prediction related to emergency manager perceptions of citizen preparedness and/or risk awareness, albeit not one of theoretical concern in this study. This block of variables measured the percent of people in each county that are in the least prepared category for each of six demographic characteristics: age; gender; household income; education; race; and employment. Determination of the least prepared

category for each of these demographics was based on data from FEMA's Citizen Survey (2009) mentioned earlier. The percent of people in the least prepared category differs from county to county, across Minnesota, and if emergency managers' perceptions are driven by on-the-ground reality rather than heuristics, these six "least prepared" demographic variables should significantly impact emergency managers' perceptions of their citizens. As the percentage of people that fall in each of the least prepared categories increases, one would expect emergency managers' perceptions of preparedness to decrease from county-to-county. Data were collected from the US Census Bureau on each of these demographic factors for the counties that completed the survey. In order to ensure an accurate list of county demographics the following question was asked in the final section of the survey: a) "Which Minnesota county are you currently employed with?" (select county from the list).

Limitations

There are several inherent limitations to the findings of this study based on the population chosen and the inability to directly measure the accuracy of emergency managers' perceptions. To begin, the population chosen focused on one state. The results will not be generalizable to all states except by implication however significance testing was still conducted on the Minnesota results as if random sampling had been used in selecting Minnesota emergency managers simply to provide a non-subjective means of identifying correlations of interest in the given population. Trends found in the data may lead to more generalizable results in the future if a study is conducted with a random sample of County Emergency Managers across the United States. Second, this study simply examines factors affecting emergency manager's perceptions of their citizens to test the role of the availability heuristics and the false consensus bias in these perceptions. If these cognitive heuristics prove to play a role in emergency manager's

perceptions, such findings would raise serious questions about the likely accuracy of emergency manager's knowledge of their citizens. Relying on information that is "available" from what one's own friends and acquaintances do and/or on what one does him or herself is fraught with problems when using such perceptions as a basis for estimating what is happening with citizens across an entire jurisdiction. Nevertheless, reliance on these heuristics does not automatically mean that jurisdictional perceptions will be wrong. Thus, a limitation of this study is the absence of a direct measure of accuracy. Do emergency managers' perceptions of their jurisdictions match what is really happening in their jurisdiction? To measure accuracy, however, would require surveys of random samples of each jurisdiction. Accomplishing a task of that magnitude is something far beyond the resources available for this study. Still, this study includes proxy measures of accuracy including a "test" of emergency managers' knowledge of factors affecting citizen preparedness and the Census data measures discussed above that likely reflect variances in county-level preparedness across Minnesota.

CHAPTER FOUR: RESULTS

Introduction

This study collected in-depth information by conducting a census of all Minnesota county emergency managers. This effort addressed two goals. First, this background data provides a description of the emergency managers along multiple dimensions. These data provide a thorough profile of the respondents to this study. Second, this information also measures factors that may impact emergency managers' perceptions of citizen preparedness and risk awareness. These factors were identified earlier in the discussion of research questions and hypotheses. The factors fall into the following general categories: demographic characteristics, emergency management experience, office structure characteristics and emergency manager office related activities. In addition, this section will report descriptive data on the preparedness and risk awareness measures relevant to this study's hypotheses.

Sample

First, demographic information for Minnesota county emergency managers in this study is presented in Table 2. The overall response rate for the survey (N=65) was 75.5%. The data revealed that the majority of the 65 county emergency managers responding to the survey are male (70.8%) and between the ages of 41-60 years (Mean = 47.54, SD = 10.81). Nearly all respondents reported having some type of college degree (84.6%) including 30.8% who have an associate degree, 40.0% who have a bachelor's degree, and 13.8% who have a master's degree.

Second, data on aspects of the emergency manager's experience in emergency management were collected (Table 3). Respondents on average have been employed as a county emergency manager for over five years (Mean = 5.74, SD = 5.10). Overall, years of experience in emergency management range from less than one year to 16 years or more with nearly one

third of respondents possessing 16 years or more of experience (31.3%). It should be noted that there were no qualifiers given during the survey process that would indicate what was meant by “experience in emergency management” and the data may not be accurate as many different types of work may be self-interpreted as emergency management.

Table 2. Personal demographic characteristics of respondents.

Demographic Characteristics	N	Percentage
Age (in years)		
20-30	5	7.7%
31-40	13	20.0%
41-50	13	20.0%
51-60	29	44.6%
61 and older	5	7.7%
Total	65	100.0%
Gender		
Male	46	70.8%
Female	19	29.2%
Total	65	100.0%
Highest Level of Education Completed		
Less than 12 th grade (no diploma)	--	--
High school graduate or GED	2	3.1%
Some college but no degree	8	12.3%
Associate degree in college	20	30.8%
Bachelor’s degree	26	40.0%
Master’s degree	9	13.8%
Doctorate degree	--	--
Total	65	100.0%

Note: The measurement for age is a continuous variable and was collapsed into categories for this table. The following is the mean and standard deviation for age (M = 47.54, SD = 10.81).

Table 3. Emergency Management experience characteristics of respondents.

Emergency Manager Experience	N	Percent
Years Employed as a County Emergency Manager		
1 to 5 years	39	59.1%
6 to 10 years	15	22.7%
11 to 15 years	8	12.1%
16 or more years	4	6.1%
Total	66	100.0%
Years of work in Emergency Management		
Less than 1 year	3	4.7%
1 to 5 years	19	29.7%
6 to 10 years	12	18.8%
11 to 15 years	10	15.6%
16 or more years	20	31.3%
Total	64	100.0%

Note: The measurement for years employed as a county emergency manager is a continuous variable and was collapsed into four categories. The following is the respective mean and standard deviation (M=5.74, SD=5.10).

Third, several measures focused on characteristics of the emergency manager’s office structure (Table 4). The majority of emergency managers (66.7%) reported having more than one position or responsibility other than emergency management. Nearly half (45.4%) of those who reported having more than one position or responsibility stated that the additional position is as a first responder (i.e. fire department, law enforcement, emergency medical services). Additional positions stated include 911/communications (18.2%), safety (13.6%), and planning and zoning/solid waste (11.4%). Over half of respondents (53.0%) reported being the only individual employed by their county for emergency management while about one third (30.3%) of the respondents reported having two individuals employed for emergency management in their county.

Table 4. Emergency Management office structure and work-related characteristics of respondents.

EM Office Structure Characteristics and Activities	N	Percent
Percent of EM's with Other Positions or Responsibilities		
Yes	44	66.7%
No	22	33.3%
Total	66	100.0%
Other Positions (N=44)		
911 Dispatch/Communications	8	18.2%
Safety	6	13.6%
First Responder (Fire, Law Enforcement, EMS)	20	45.4%
Planning and Zoning/Solid Waste	5	11.4%
Other	4	9.1%
Did Not Specify	1	2.3%
Total	44	100.0%
Number of Hours per Week Spent on Emergency Management Activities		
0-10 hours	13	19.7%
11-20 hours	11	16.7%
21-30 hours	17	25.8%
31-40 hours	21	31.8%
40 or more hours	4	6.0%
Total	66	100.0%
Percent of Emergency Managers Who Have Experienced a Presidentially Declared Disaster in Their Current County that was Granted Individual Assistance		
Yes	33	50.0%
No	33	50.0%
Total	66	100.0%

Note: The measurements for hours per week spent on emergency management activities and hours spent per week on preparedness are continuous variables and were collapsed into categories to display their distributions. The following is the respective means and standard deviations for both variables (M=27.50, SD=14.09) and (M=4.19, SD=4.50).

Fourth, the survey asked about emergency manager's office, work-related activities (Table 4). On average, respondents spend 27.5 hours a week on emergency management activities (M=27.50, SD=14.09). Of those hours spent on emergency management activities,

emergency managers reported spending on average 4.19 hours a week on preparedness activities (M=4.19, SD=4.50). Lastly, half of respondents (50.0%) reported having experienced a presidentially declared disaster in their current county that included a grant of individual assistance.

Lastly, data were collected on data directly related to this study's hypotheses – emergency managers' self-reported preparedness and risk awareness, emergency managers' perceptions of their friends and acquaintances preparedness and risk awareness, and manager's perceptions of their jurisdictions' preparedness and risk awareness. To begin, the preparedness measures used the preparedness checklist from the FEMA (2009) survey. Results for emergency managers' perceptions of citizen preparedness, acquaintances preparedness, and a self-reported preparedness are summarized in Table 5. The Table shows the percent of emergency managers selecting one of the eleven percentage points (from 0% to 100% in increments of 10) as representative of emergency managers' perceptions of the percent of citizens or acquaintances possessing a given supply and shows the percent of emergency managers' self-reporting their own possession of a given supply. For all supply items that were addressed by the supplies checklist, the overall data summary shows that emergency managers perceive the general citizenry to be the least prepared of the three groups assessed, followed by acquaintances and then emergency managers themselves. These results were not surprising. Emergency managers should be expected to be more prepared than the general citizenry and likely to perceive friends and families as sharing similar interests in preparedness compared to citizens overall.

Similarly, results for emergency managers' perceptions of citizens' risk awareness (likelihood of hazard occurrence), of acquaintances' risk awareness, and managers' self-reported risk awareness are summarized in Table 6. Results show the percent of emergency managers

selecting one of the eleven percentage points as representative of the percent of citizens or acquaintances who judge the given hazard as likely or very likely to occur and percent of emergency managers' self-reporting the incident as likely or very likely to occur. For all hazards that were assessed, the overall data summary shows that the emergency manager perceives that the general citizenry is less likely to perceive various hazard-related events to occur than emergency managers perceive acquaintances or themselves to expect such events to be likely or very likely to occur. This ranking of awareness suggests that emergency managers whose job it is to think about risk are more likely to expect such events than perhaps their friends, family, and acquaintances and their general citizenry are.

Table 5. Comparing Emergency Manager's perceptions of citizens', acquaintances', and their own preparedness levels by type of supply.

Supply Type	Emergency Manager's Perceptions of Supplies Held by Citizens and Acquaintances and Percent of Emergency Managers Who Personally Possess Supplies											Av.
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
Bottle Water												
Citizen	3.1	30.8	26.2	12.3	6.2	9.2	6.2	--	6.2	--	--	27.6%
Acquaintance	4.5	15.2	16.7	22.7	9.1	6.1	12.1	1.5	7.6	3.0	1.5	36.9%
Self												83.3%
Packaged Food												
Citizen	6.2	35.4	23.1	16.9	3.1	9.2	3.1	1.5	1.5	--	--	23.2%
Acquaintance	7.7	20.0	15.4	23.1	13.8	4.6	1.5	6.2	6.2	1.5	--	31.3%
Self												75.8%
Flashlight												
Citizen	1.5	7.7	4.6	10.8	10.8	10.8	4.6	12.3	12.3	16.9	7.7	58.7%
Acquaintance	3.0	4.5	6.1	7.6	7.6	4.5	6.1	4.5	25.8	13.6	16.7	65.6%
Self												100.0%
Radio												
Citizen	3.1	20.0	20.0	16.9	12.3	10.8	6.2	3.1	3.1	3.1	1.5	34.0%
Acquaintance	3.0	15.2	13.6	18.2	4.5	13.6	6.1	7.6	10.6	4.5	3.0	42.8%
Self												74.2%
Batteries												
Citizen	3.1	10.8	21.5	15.4	9.2	7.7	10.8	7.7	9.2	3.1	1.5	41.0%
Acquaintance	1.5	10.6	10.6	18.2	7.6	6.1	13.6	9.1	13.6	6.1	3.0	48.6%
Self												93.9%
First-aid Kit												
Citizen	1.5	12.3	15.4	16.9	10.8	12.3	10.8	6.2	9.2	3.1	1.5	42.3%
Acquaintance	3.0	10.6	9.1	10.6	10.6	15.2	10.6	7.6	9.1	10.6	3.0	49.3%
Self												93.9%
Eyeglasses												
Citizen	9.4	32.8	15.6	6.3	7.8	9.4	4.7	4.7	4.7	3.1	1.6	30.3%
Acquaintance	10.8	26.2	12.3	13.8	9.2	6.2	7.7	6.2	6.2	1.5	--	31.2%
Self												60.0%
Medications												
Citizen	6.3	35.9	18.8	15.6	6.3	3.1	3.1	6.3	3.1	--	1.6	26.4%
Acquaintance	10.6	22.7	22.7	12.1	9.1	3.0	6.1	6.1	4.5	1.5	1.5	30.0%
Self												47.7%
Photocopies of identification												
Citizen	14.1	35.9	28.1	14.1	4.7	1.6	--	1.6	--	--	--	17.1%
Acquaintance	13.6	24.2	27.3	10.6	7.6	6.1	4.5	3.0	--	1.5	1.5	24.8%
Self												47.0%
Financial documents												
Citizen	10.9	35.9	28.1	15.6	--	--	3.1	4.7	--	1.6	--	20.4%
Acquaintance	10.6	27.3	27.3	10.6	6.1	7.6	6.1	1.5	--	3.0	--	25.0%
Self												49.2%
Cash												
Citizen	12.5	25.0	32.8	7.8	10.9	7.8	--	1.6	1.6	--	--	22.0%
Acquaintance	10.6	19.7	16.7	10.6	15.2	16.7	3.0	--	6.1	1.5	--	30.9%
Self												56.1%

Table 6. Comparing emergency manager’s perceptions of citizens’, acquaintances’, and their own risk awareness by type of incident

Incident Type	Emergency Managers’ Perceptions of the Percent of their Citizens or Acquaintances Who Judge an Incident as Likely or Very Likely to Occur and Percent of Emergency Managers’ Who Judge an Incident as Likely or Very Likely to Occur											
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	Av. ¹
Natural Disaster												
Citizen	--	3.0	7.6	4.5	3.0	1.5	6.1	16.7	21.2	19.7	16.7	71.8%
Acquaintance	--	1.5	3.1	3.1	4.6	6.2	7.7	7.7	21.5	24.6	20.0	76.0%
EMs												94.0%
Terrorism												
Citizen	9.1	42.4	30.3	6.1	6.1	--	3.0	1.5	--	--	1.5	18.9%
Acquaintance	9.2	26.2	23.1	6.2	7.7	9.2	6.2	3.1	7.7	1.5	--	30.1%
EMs												13.6%
Hazardous Materials												
Citizen	--	7.6	7.6	18.2	9.1	22.7	15.2	3.0	12.1	4.5	--	47.7%
Acquaintance	--	4.6	10.8	6.2	9.2	16.9	12.3	16.9	13.8	4.6	4.6	55.6%
EMs												80.3%
Disease Outbreak												
Citizen	1.5	24.2	24.2	18.2	7.6	18.2	3.0	1.5	1.5	--	--	28.9%
Acquaintance	--	20.0	15.4	13.8	7.7	18.5	10.8	10.8	3.1	--	--	38.0%
EMs												25.7%

¹Emergency Managers were asked what percent of their acquaintances or friends would judge an incident as likely or very likely, so percentages in this column for acquaintances and citizens are simple averages. For self-reports, the percentages are the average percent of emergency managers who said that they believe an incident as likely or very likely on a 5-point scale.

Research Question 1- Demographic Characteristics: Do selected demographic characteristics of emergency managers predict emergency managers' perceptions of their own county's citizen preparedness and/or risk awareness?

Results of ANOVA tests for the influence of emergency manager demographics for both perceptions of citizen preparedness index and citizen risk awareness index suggest that the demographic variables (i.e., gender and education) do not predict either dependent variable (see Table 7).

Table 7. ANOVA's for emergency manager demographic characteristics and emergency managers's perceptions of jurisdictional preparedness and risk awareness.

Demographic Characteristics	Perceived Citizen Preparedness				Perceived Citizen Risk Awareness			
	M	SD	F	p	M	SD	F	p
Gender								
Male	31.50	18.07	.24	.62	41.06	1.57	.04	.82
Female	29.23	13.27			41.91	1.38		
Education								
High School Graduate or GED	21.81	--	.96	.43	45.00	1.06	.39	.81
Some college but no degree	35.90	10.73			36.56	0.83		
Associate degree in college	32.72	20.43			41.63	1.79		
Bachelor's degree	31.23	14.63			43.30	1.57		
Master's degree	21.91	17.09			38.61	1.29		

Note: Means for perceived preparedness report the average perceived citizen preparedness level by emergency managers in that demographic category. Similarly, the means for risk awareness report the perceived level of citizen risk awareness by emergency managers in that demographic category.

Similarly, a correlation analysis was conducted for the continuous independent variable age and both dependent variables. The results are as follows: age and perceived preparedness, $r = .18, ns$; age and perceived risk awareness, $r = .02, ns$; indicating that age was not significantly related to either dependent variable. Thus, the demographic characteristics in this study do not predict the perceptions of county-wide preparedness or risk awareness. Future research outside

the scope of this study needs to assess whether the demographic characteristics of the emergency manager affect perceptions of demographic subgroups within the county (e.g., do perceptions of female citizens’ preparedness and risk awareness differ by gender of the emergency manager?)

Research Question 2 – Emergency Management Experience: Do the emergency management related experiences of emergency managers predict emergency managers’ perceptions of their own county’s citizen preparedness and/or risk awareness?

Results for ANOVA tests for the influence of emergency management related experiences of emergency managers on perceptions of citizen preparedness index and citizen risk awareness index suggest that neither years of experience in emergency management overall nor experience with a presidential disaster declaration predict either dependent variable (see Table 8).

Table 8. ANOVA’s for emergency manager experience characteristics and emergency manager’s perceptions of citizen preparedness and risk awareness.

EM Experience Characteristics	Perceived Preparedness				Perceived Risk Awareness			
	M	SD	F	p	M	SD	F	p
Years of experience in EM								
Less than 1 year	28.78	18.05	.16	.95	39.17	1.28	.16	.95
1 to 5 years	30.16	15.53			40.14	1.47		
6 to 10 years	27.72	11.18			37.71	1.73		
11 to 15 years	30.90	13.83			49.00	1.49		
16 or more years	32.18	18.5			41.63	1.29		
Experience with a Presidential Disaster Declaration with Individual Assistance								
Yes	29.97	17.01	.05	.34	41.89	1.47	.05	.81
No	34.64	16.62			41.02	1.56		

In addition, correlation analyses were conducted for the continuous independent variable, years employed specifically as a county emergency manager, and both dependent variables ($r = -.05, ns$; $r = .007, ns$). Years of employment, specifically as a county emergency manager, was not

significantly related to either dependent variable. Thus, neither experience in emergency management, overall, specific experience as an emergency manager in a given county, nor experience at some point with a presidentially declared disaster affected emergency managers' perceptions of citizen preparedness or risk awareness. As noted earlier, research on self-reported citizen preparedness is disappointing and one might expect more seasoned emergency managers' perceptions to be enhanced by encountering this reality first-hand, but this does not appear to be the case.

Research Question 3 – Emergency Management Office Structure: Do the structural characteristics of the emergency managers' county office predict emergency managers' perceptions of their own county's citizen preparedness and/or risk awareness?

Results for ANOVA tests for the influence of structural characteristics of emergency manager's county office for both perceptions of citizen preparedness and citizen risk awareness suggest that structural characteristics do not predict either dependent variable (see Table 9). Emergency managers' perception of county preparedness and risk awareness did not differ for emergency managers who did or did not hold other positions nor did these perceptions differ by the size of emergency manager's office.

Table 9. ANOVA's for emergency management office structure characteristics and emergency manager's perceptions of citizen preparedness and risk awareness.

EM Office Structure Characteristics	Perceived Preparedness				Perceived Risk Awareness			
	M	SD	F	p	M	SD	F	p
Other positions or responsibilities								
Yes	30.61	15.49	.02	.88	41.92	1.63	.11	.73
No	31.27	19.47			40.57	1.24		
Number of county EM personnel								
1	30.02	17.17	.36	.77	41.50	1.41	1.43	.24
2	31.77	15.58			37.76	1.47		
3	35.32	18.38			51.43	1.80		
4 or more	25.00	19.53			41.25	1.78		

Research Question 4 – Emergency Management Office Related Activities: Does the office-related activity level of the emergency manager predict emergency managers' perceptions of their own county's citizen preparedness and/or risk awareness?

Results of correlation analyses for the influence of office-related activity level of emergency managers for both perceptions of citizen preparedness and citizen risk awareness suggest that office-related activities do not predict either dependent variable. Results for the continuous independent variables of hours per week spent on emergency management activities and hours per week spent on promoting citizen preparedness are as follows, respectively: perceived preparedness, $r = -.03, ns$; $r = .13, ns$; perceived risk awareness, $r = .12, ns$; $r = .06, ns$. Measures of office related activity were not related to emergency managers' perceptions.

These results parallel the earlier findings on emergency managers' experience in emergency management, while neither general experience in the field, specific experience in the county nor activity directly related to promoting emergency management and preparedness affects emergency managers' perceptions of their citizens. Similarly, neither the managers'

ascribed (gender and age), nor his or her achieved (education) characteristics affect managers' perceptions of their citizens. However, Tables 5 and 6 clearly showed variations in emergency managers' perceptions but the results so far provided little insight into the source of that variability. The variability is not due to the emergency managers' personal demographic characteristics, nor his or her office structure, nor the manager's experience in his or her office, nor in his or her level of activity in the office. Perhaps the variability is simply due to the actual preparedness levels and levels of risk awareness really being different from county-to-county. This possibility is explored in the next research question.

Research Question 5 – Variability in County Demographics: Do the preparedness-related demographic characteristics of the counties predict emergency managers' perceptions of their own county's citizen preparedness and/or risk awareness?

This research question is basically asking whether emergency managers' perception of their counties reflect the reality of what is happening at the county level. To directly answer this question would require surveys to be conducted in each county so that there could be a direct comparison of survey results with emergency managers' perceptions. As noted earlier such a project would be costly and time prohibitive. Alternatively, it was possible to identify from the FEMA survey (Federal Emergency Management Agency, 2009), the category in each of several demographics that actually reflected the least prepared group nationally and then determine the percent of each county's population in that category. If emergency managers' perceptions of preparedness were reality-based their perceptions should vary with variations from county-to-county in the percentage of county citizens in the least prepared category for any given demographic characteristic mentioned in the FEMA surveys.

Results of correlation analyses for the influence of preparedness-related county demographic characteristics relative to emergency managers' perception of their citizens' preparedness and risk awareness suggest that only the independent variables of county gender (% female) and county employment (% retired) influence perceptions of preparedness and that none of the county demographics (as mentioned above) affect perceptions of risk awareness (see Table 10).

Table 10. Correlation analysis for preparedness-related demographic characteristics of counties and emergency manager's perspectives of jurisdictional preparedness and risk awareness.

County Percent in least prepared demographic category	Perceived Preparedness		Perceived Risk Awareness	
	r	p	r	p
Age (% 55+)	.08	.25	-.18	.07
Gender (% female)	-.20	.05	-.10	.19
Income (% < \$25,000)	-.001	.49	-.19	.06
Education (% with HS degree only or less)	-.01	.45	-.15	.10
Race (% Black or African American)	-.14	.13	.09	.23
Employment (% Retired)	.39	.00	-.01	.46

The relationship of percent female in each county with perceived preparedness shows that emergency managers perceive preparedness to be less in counties with higher percentages of females and the FEMA survey did show a relationship between gender and preparedness. However, the sign for the significant percent retired correlation is the opposite of what research suggests. As the percent of retired people grows from county to county, research suggests that preparedness should be perceived to be less. Instead, emergency managers perceived preparedness to be greater.

Overall, the general absence of significant correlations between emergency managers' perceptions and known predictors of preparedness is troubling. While it is clearly a difficult task to accurately estimate the exact level of preparedness and risk awareness in a county, one could

still anticipate sensitivity to demographic predictions of preparedness in a county such that there would be correlations across counties between estimates of citizen preparedness and county-level demographic predictions of such. This generally was not the case. So, are emergency managers' perceptions simply random guesses unrelated to experience and/or on the ground reality or is there some other source of data used by emergency managers that might suggest a pattern behind what otherwise appears to be mere guessing?

The hypotheses to follow predict that emergency managers' perceptions are patterned and based on data, but on data sources much closer to home. The hypotheses are independent of the research questions. They would be offered whether the research questions were found to be answered positively or negatively. Still the hypotheses become more interesting if supported, given the pattern of findings so far.

Hypotheses

False Consensus Hypothesis: Emergency managers' self-reports of their own risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their own county's citizen risk awareness level and preparedness level, respectively.

Availability Hypothesis: Emergency managers' perceptions of their friends' and family's risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their own county's citizen risk awareness and preparedness level, respectively.

Correlational data support both the False Consensus Hypothesis and the Availability Hypothesis. For risk awareness, the correlations of emergency managers' self-perception of risk awareness (False Consensus Hypothesis) and their perceptions of their friends' and family's risk awareness (Availability Hypothesis) are both significantly related to emergency managers'

perceptions of citizen risk awareness ($r = .22, p < .05$; $r = .21, p < .05$, respectively). Similarly, for preparedness, the correlations of emergency managers' own preparedness level and their perceptions of their friends' and family's preparedness level are both significantly related to emergency managers' perceptions of jurisdictional preparedness ($r = .29, p < .01$; $r = .79, p < .001$, respectively). Based on the correlations alone, emergency managers' perceptions of their jurisdictions appear to be related to both their self-perceptions and their perceptions of their acquaintances as these two heuristic hypotheses suggest. Especially dramatic is the large correlation between emergency managers' perception of their friends' and family's preparedness and emergency managers' perceptions of citizen preparedness strongly supporting the plausibility of the Availability Hypothesis.

A stronger test of the two hypotheses is to control on other factors that might explain variation in emergency managers' perceptions of their jurisdictions via the use of multiple regression to see if the correlational relationships remain (Table 11). Two multiple regression models were created, one using emergency managers' perceptions of their county's risk awareness as a dependent variable and one using their perceptions of their county's preparedness level as a dependent variable. For each model, only those factors found to be significantly related to the respective dependent variable as assessed in the above research questions were used as controls. In the first model, no potential control factors proved significant in the above analyses, so the model simply included the independent variables for the two hypotheses (i.e., emergency managers' self-reported risk awareness and their perception of their acquaintances' risk awareness). For the second model, two factors were found to be significantly related to emergency managers' perceptions of jurisdictional preparedness (i.e., county-level percent female and percent retired) and were included along with the two appropriate independent

variables for the two hypotheses (i.e., emergency managers' self-reported preparedness and emergency managers' perceptions of their acquaintances' preparedness).

Table 11. The impact of county demographics, perceptions of acquaintances, and self-reported preparedness and risk awareness on perceptions of citizen preparedness and risk awareness.

Independent Variable	Perceived Citizen Preparedness			Perceived Citizen Risk Awareness		
	β	SD	t	β	SD	t
County Gender	-.07	149.35	-.95	-	-	-
County Employment	.22	32.05	2.80*	-	-	-
Perceptions of Friends ^a	.77	.08	8.70**	.53	.10	4.27**
Self-Report ^b	-.08	8.08	-.93	-.03	.28	-.27
R ²	.66			.24		
F	30.43**			11.24**		

*p<.01

**p<.001

^a Perception of Friends refers to perception of friends' preparedness for the preparedness model and to perception of friends' risk awareness for the risk awareness model.

^b Self-report refers to self-reported perceptions of emergency managers personal preparedness and risk awareness.

The multiple regression data for perceptions of citizen preparedness support the continued plausibility of the Availability Hypothesis. The F-Value (df = 30.43) indicates that the overall model is significant (p<.000) and the R² (.66) suggests 66 percent of the variation in emergency managers' perceptions of citizen preparedness is explained. Regression data also show that the independent variables of county-level percent retired and perceptions of friends and family are significant (see Table 11). The independent variable, county-level percent female, is no longer significant.

Two of these results are surprising and one is consistent with the hypothesized effects. First, county employment (i.e., county-level percent retired) was significant, but the sign for this factor's beta ($\beta = .22$) is opposite from what research suggests it should be. As noted earlier, the FEMA preparedness surveys (2007, 2009, 2011) suggest that retired persons are the least

prepared among categories of employment status, so the sign of their category should be negatively, not positively, related to perceptions of county-wide citizen preparedness. The significant beta shows that emergency managers are sensitive to the size of this employment category in their counties but draw conclusions about the size of this category and its impact on county-wide preparedness that are opposite of what research suggests is true. The second surprise is the absence of a significant beta for emergency managers' self-reported preparedness. The False Consensus Hypothesis is not supported for perceptions of citizen preparedness.

In contrast, the results clearly support the Availability Hypothesis. The beta for perceptions of friends' preparedness is significant and large. This is an important factor in emergency managers' perceptions of county preparedness as predicted by the Availability Hypothesis.

Multiple regression data for perceived citizen risk awareness also supports the Availability Hypothesis. The model examined the independent variables of perceptions of friend's risk awareness and self-reported risk awareness. The F-value ($df = 11.24$) indicates that the model is significant ($p < .001$) and the R^2 suggests that 24% of the overall variance in emergency managers' perceptions of citizen preparedness is explained. Data also shows that perceptions of friends' risk awareness is significant while self-reported risk awareness is no longer significant (see Table 11). Thus, the continued significance of perceptions of friend's risk awareness related to citizen risk awareness supports the viability of the Availability Hypothesis. Similar to the regression data for variables related to perceptions of citizen preparedness, the data show large differences in the beta values for the independent variables related to citizen risk awareness: perceptions of friends risk awareness ($\beta = .53$) and self-reported risk awareness ($\beta = -.03$). The large difference in beta values suggests that the independent variable, perceptions of

friends risk awareness, has a substantial impact on the dependent variable compared to self-reported risk awareness.

Thus, the multiple regression analyses for both perceptions of citizen preparedness and perceptions of citizen risk awareness support the Availability Hypothesis, but not the False Consensus Hypothesis. In both regression runs, the independent variables for emergency managers' self-reported preparedness and risk awareness were shown as not significant. There is little evidence that emergency managers are using either their own preparedness level or their own risk awareness as a basis for estimating the preparedness level or risk awareness of citizens in their jurisdiction.

Finally, comparing the regression models for preparedness and risk awareness estimates reveal interesting similarities and differences. Both models are significant and much of the variability in emergency manager's perceptions for both dependent variables can be explained. However, far more variability can be explained for perceptions of citizen preparedness (i.e., 66% of the variance in perceived jurisdictional preparedness is explained by its model while only 24% of variance in perceived jurisdictional risk awareness is explained by the model). There is much left to be done beyond verifying the relevance of the availability heuristic in identifying strong predictors of emergency managers' perceptions of their county's risk awareness, especially since none of the factors examined as part of the earlier discussed exploratory research questions proved to be a significant predictor.

CHAPTER FIVE: DISCUSSION

Research in social psychology suggests that human perceptions of social reality are often incorrect. A particularly promising approach to understanding this accuracy gap is our use of cognitive heuristics such as the availability heuristic and false consensus effect. This study examined whether these cognitive heuristics impact how county emergency managers perceive citizen risk awareness and citizen preparedness. The research sample for this study was county emergency managers in the state of Minnesota. The research addressed the following five questions: 1) Do demographic characteristics of emergency managers' predict their perceptions of their county's preparedness and/or risk awareness; 2) Do emergency management-related experiences of emergency managers' predict their perceptions of their county's preparedness and/or awareness; 3) Do the structural characteristics of the emergency manager's county office predict perceptions of county preparedness and/or risk awareness; 4) Does the office-related activity level of emergency managers predict their perceptions of their county's preparedness and/or risk awareness; and 5) Do the preparedness-related demographic characteristics of the counties predict emergency managers' perceptions of their county's preparedness and/or risk awareness. The data analysis revealed that emergency manager's demographic characteristics do not predict their perceptions of county preparedness or risk awareness. Similarly, neither general experience in emergency management, specific experience as an emergency manager in a given county, experience at some point with a presidentially declared disaster, structural characteristics of emergency managers' county office, nor office-related activity levels predict perceptions of citizen preparedness or risk awareness. Thus, none of the emergency manager's background characteristics, office structure characteristics, or emergency management-related activity levels play a role in perceptions of citizens' preparedness or risk awareness.

Finally, shifting the focus from the emergency manager to citizen characteristics, still only two significant correlations emerged. County-level gender (percent female citizens) and employment (percent retired citizens) were significantly correlated to perceptions of citizen preparedness but not risk awareness. In sum, the exploratory research questions in this study were generally answered in the negative.

Two hypotheses were tested in this study. Both dealt with how emergency managers were expected to formulate perceptions of their jurisdictions in the face of uncertainty or lack of information to confirm their perceptions. The hypotheses are the False Consensus Hypothesis and the Availability Hypothesis. The False Consensus Hypothesis predicts that emergency managers' self-reports of their own risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their county's risk awareness level and preparedness level, respectively. The Availability Hypothesis predicts that emergency managers' perceptions of their friends and family's risk awareness level and preparedness level will correlate positively with emergency managers' perceptions of their county's risk awareness and preparedness level, respectively. The multiple regression analysis shows that the Availability Hypothesis is supported and the False Consensus Hypothesis is not. The analysis revealed exceptionally high impacts of perceptions of friends and family preparedness and risk awareness levels on perceptions of citizen preparedness and risk awareness. The models for citizen preparedness and citizen risk awareness were significant with substantial R^2 values (66%, citizen preparedness; 24%, citizen risk awareness). Thus, the Availability Hypothesis is supported across two perceptual phenomena, preparedness and risk awareness, with perceptions of ones' friends' and family's behavior as the most important predictor of both perceptual phenomena.

Availability Heuristic

Because there is no prior research exploring cognitive heuristics utilized by emergency managers when forming perceptions of citizen preparedness or risk awareness, it was prudent to start this exploration with a very commonly used heuristic, the availability heuristic. As stated by Tversky and Kahneman (1973) “a person is said to employ the availability heuristic whenever he estimates frequency or probability by the ease with which instances or associations could be brought to mind” (pg. 208). In other words, individuals base their own perceptions of others behavior, its frequency or probability, on their ability to recall instances when the behavior was previously seen, for example, in their own social circle. These perceptions would then be used to describe the behaviors of an unknown group. Previous research conducted by Folkes (1988), on how consumers perceive risks of product failure states that “consumers may estimate product failure by determining how easy it is to recall such incidents. When retrieval seems easy, the event will be judged probable; when retrieval seems difficult, the event will be judged improbable” (pg. 13). The present research worked to see if the same cognitive bias could be applied to the way emergency managers view citizen preparedness and risk awareness in their jurisdictions. To make that determination it was necessary to see if emergency managers were basing their perceptions of citizen preparedness, an outside group where the actual level of preparedness is likely to be an undetermined quantity, on their perceptions of the behaviors of emergency managers’ acquaintances, an in-group where behaviors are likely to be much easier to recall.

It was predicted that the results of the study would indeed indicate that emergency managers are basing their perceptions of citizen preparedness and risk awareness on the behaviors of their acquaintances (friends and family) because the behaviors of acquaintances

would be much easier to recall than those of the general public. The results suggest that the availability heuristic plays a significant role in the way emergency managers form their perceptions of both citizen preparedness and risk awareness.

The support for the availability hypothesis in this study sends a warning message to professionals who are placed in the role of making judgments about the frequency or likelihood of an event or behavior in uncertain situations. Such judgments are not automatically incorrect. It may be that the level of preparedness, in the case of emergency management, is the same for citizens as for the emergency manager's acquaintances. However, the concern is the possibility that the source of the data being used to make such a judgment (i.e., behaviors of friends and acquaintances rather than the general public) is either unrecognized by the professional as the source of his or her perceptions and possibly incorrect as a prediction of how prepared the general public is.

False Consensus Effect

Another heuristic that was examined in this study that was speculated to play a role in the formation of an emergency manager's perception of citizen preparedness and risk awareness was the false consensus effect. In a broad sense, the false consensus effect is described by Ross, Green, and House (1977) as the tendency for individuals to perceive "their own behavioral choices and judgments are relatively common and appropriate to existing circumstances while viewing alternative responses as uncommon, deviant, or inappropriate" (p. 280). In other words, individuals tend to perceive the behaviors of others to be similar to their own.

It was predicted that the results of the study would support the False Consensus Hypothesis. The expectation was that there would be correlation between emergency managers' self-reports of preparedness or risk awareness and the managers' perceptions of their citizens'

preparedness or risk awareness, respectively. However this Hypothesis also implies a correlation between emergency managers' self-perceptions and managers' perceptions of their friends and acquaintances. In fact, Dawes' research (1989) would lead us to expect an even stronger correlation for the latter as opposed to the former relationship. The results offered no support for these expectations. Thus, the results of the data suggest that the false consensus effect does not play a significant role in the way emergency managers form their perceptions of both citizen preparedness and risk awareness.

It is interesting to speculate that there may be an integrative explanation for why the Availability Hypothesis worked and the False Consensus Hypothesis did not. The integrative notion is to suggest that the emergency manager's fundamental viewpoint of his or her county's residents is as an outsider or a uniquely trained individual that should be expected to see the world differently than others do. Support for the Availability Hypothesis makes sense from this perspective because the support shows that the emergency manager sees both their friends/acquaintances and the rest of the county's residents as similar to each other, that is, both groups are "outsider" to the emergency manager's world so that information on one group (acquaintances) generalizes in the emergency manager's mind to the other groups. Similarly, the lack of support for the False Consensus Hypothesis is consistent with the emergency manager seeing himself or herself as an outsider and dissimilar to all the others (i.e., both friends and family, and citizens). The emergency manager does not see his or her own experience as applicable to "outsiders" whether friends, acquaintances or the general citizenry. It may be that the False Consensus Hypothesis is only predictive when the person perceives others and themselves as part of the same in-group. This interpretation is consistent with Dawes' (1989) speculation about the false consensus effect. Dawes (1989) argued that the false consensus effect

is most likely to work if there is “a positive correlation across subjects (within items) between their own endorsements of a behavior or attitude item and their estimates of the endorsement frequency *in a specified group of which they are a member*” (italics added) (pg. 1). Thus, according to Dawes (1989) the false consensus effect would be unlikely to apply to a situation where the perceiver is an expert and both friends and family and citizens are outgroup, non-experts. In contrast, the emergency manager may feel comfortable (at least subconsciously) in using his/her own available group (i.e. friends and family) to predict behavior of another less available outside group, the citizens, thus supporting the prediction of the Availability Hypothesis.

Further Research

This study opens the door for much additional research on the role of cognitive heuristics in the many important decisions an emergency manager makes. For example, the optimism bias (DeJoy, 1989; McKenna, 1993; Weinstein, 1908) could be causing an over estimation of preparedness or risk awareness based on emergency managers’ desire to see well prepared citizens, especially after working with citizen groups on preparedness. A related bias, the confirmation bias (Koslowski & Mariano, 1993; Mynatt, Doherty, & Tweney, 1977; Nickerson, 1998), could be a factor if the initial expectations or beliefs of the emergency managers are affecting their subsequent perceptions. Group attribution error is another possibility. The effects of this bias could cause an emergency manager to believe that the characteristics of one individual or group are reflective of an entire group or community, even when there is information that suggests that the perception is incorrect (Allison & Messick, 1985; Jellison & Green, 1981; Mackie & Allison, 1987).

All of the above heuristics have in common the use of cognitive shortcuts to evaluate one's environment and such shortcuts are most likely to be used precisely in the kinds of settings that can face emergency managers—settings where information is limited, where a quick decision is needed, or where both conditions exist (e.g., in a disaster setting). This study just scratches the surface of what still needs to be done in applying cognitive heuristics to decision-making in emergency management.

More narrowly, there are several avenues for future research to pursue focusing just on the availability heuristic. These include both methodological refinements (the first three suggestions below) and theoretical expansions on this study (the final suggestion). First, future research could expand the population studied. This study only included a census of county emergency managers in the state of Minnesota, thus the results of this study are not generalizable. While there is no apparent reason to suspect that cognitive heuristics would operate differently for emergency managers from other areas and/or countries that possibility needs to be explored, especially considering how strong of correlations the significance testing revealed.

Second, future research could expand the list of dependent variables to be studied from *perceptions* of county-level citizens' preparedness and risk awareness to include measures of perceptual *accuracy*. This study focused on factors affecting emergency managers' perceptions in an effort to understand the extent to which these perceptions are affected by the use of cognitive heuristics. This is the appropriate focus for a study of cognitive heuristics, but it leaves an important question unanswered. No effort was made to directly determine whether the measured perceptions ultimately were accurate or not. The use of cognitive shortcuts clearly increases the likelihood of inaccurate perceptions although poor decision-making does not

automatically lead to poor decisions. Additionally, this study did not make an effort to determine how much exposure emergency managers have had to the FEMA preparedness survey information and/or additional research on citizen preparedness. Increased exposure and knowledge of citizen preparedness may also have the ability to impact the accuracy of perceptions. However, this study has documented that the availability heuristic significantly impacts perceptions, so the next logical step is to determine the extent to which the accuracy of these perceptions are negatively affected.

Such a study will not be easy. It will require the collection of data from random samples of citizens and from emergency managers' friends and acquaintances. In addition, a focus on accuracy should include a study of predictors which did not play a role in this study's analysis of perceptions (e.g., factors such as an emergency managers' knowledge of relevant research). There is undeniably a wealth of knowledge that could be revealed from exploring this topic further, but the logistics of such a task may drastically impede the process.

Third, future research should include more sophisticated measures of citizen preparedness. As noted earlier, the measure used in this study is one of the more popular measures in the literature, but the preparedness literature contains inconsistent information (Andrews, 2001; Kapucu, 2008; Perman, Shoaf, Kourouyan, & Kelly, 2011; Tierney, Lindell, & Sutton, 2001; Tierney & Sutton, 2006). Better measures of risk awareness would be of value as well.

Fourth, this study has focused on only one aspect of emergency management, estimating population characteristics within an emergency manager's jurisdiction. Cognitive heuristics can play a role in many other aspects of the emergency manager's role including one area of particular concern. As noted above, shortcuts are especially likely to be used when making

decisions under stress and these conditions certainly exist during disasters. Many decisions have to be made often with little data, and it is in such situations of high pressure and great uncertainty that decisions may be more a product of cognitive heuristics than of rational analysis. Future research should explore the role of cognitive heuristics in such settings, the consequences of using such heuristics, and how to avoid possible negative consequences of their use.

Finally, a substantive expansion of this study would be to study the role of other cognitive heuristics in emergency managers' perceptions and decision-making. As noted above, many other cognitive heuristics may contribute to the judgments emergency managers have to make but further research is needed to make that determination. In addition, research should explore factors that increase or decrease emergency managers' reliance on any one or more of these heuristics.

The above suggestions focus on cognitive heuristics and emergency management. However, several articles were cited earlier about the role of cognitive heuristics in other fields, such as medicine, where professionals make very important decisions in the face of uncertainty (e.g. in an emergency room). Surprisingly, most of these articles simply state the likely relevance of cognitive heuristics in the decision making of these professional groups but provide little or no relevant data other than anecdotal examples. This study, albeit modest in scope and sample size, appears to be one of the first to actually demonstrate the role and importance of cognitive heuristics in the context of one's professional responsibilities. It can be painful to have one's perceptions and/or decisions as a professional critiqued as non-rational, but it is better to understand this is a predictable event than to ignore it regardless of one's profession. Hopefully, this study will trigger more direct research on cognitive heuristics in professional decision-making not only in emergency management but other professions as well.

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APPENDIX A. IRB APPROVAL LETTER



February 27, 2014

FederalWide Assurance FWA00002439

Dr. George Youngs
Emergency Management
Minard 428C-2

Re: IRB Certification of Exempt Human Subjects Research:
Protocol #HS14201 , "Everybody's Doing It, Right?: An exploratory study fo Minnesota
emergency managers' perceptions of citizen preparedness"

Co-investigator(s) and research team: **Breanna Koval**

Certification Date: 2/27/14 Expiration Date: 2/26/17
Study site(s): **varied**
Funding: **n/a**

The above referenced human subjects research project has been certified as exempt (category # 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*). This determination is based on original protocol materials (received 2/21/14).

Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- Conduct the study as described in the approved protocol. If you wish to make changes, obtain approval from the IRB prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.
- Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.

Sincerely,

Kristy Shirley, CIP, Research Compliance Administrator

INSTITUTIONAL REVIEW BOARD
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Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo, ND 58102

NDSU is an E/AAE university

APPENDIX B. INFORMATION SHEET

An Exploratory Study of Minnesota Emergency Managers' Perceptions of Citizen Preparedness

Information Sheet

Research Study:

You are being invited to participate in an electronic survey for an exploratory study of Minnesota emergency managers' perceptions of citizen preparedness.

This study is being conducted under the auspices of the Emergency Management Program at North Dakota State University. The actual survey process will be conducted electronically and the data collected will be analyzed to fulfill the thesis research requirement of a graduate student in Emergency Management at North Dakota State University.

Purpose of Study:

The purpose of this research study is to determine the perceived level of citizen preparedness by county emergency managers and how that perception is the same or differs from the real-life citizen preparedness. Additionally, factors that may influence an emergency managers' perception of citizen preparedness will be explored.

Basis for Participant Selection:

You have been invited to participate in this research project because you are a county emergency manager in Minnesota.

Explanation of Procedures:

Should you choose to participate in this study you may complete the survey at anytime by following the URL link in the invitation email. Multiple pretests of the survey with county emergency managers outside Minnesota have found that the survey will take 10-15 minutes at most. Upon request, the final results of the study can be provided.

Potential Risks and Discomforts:

There should be no potential discomfort or physical, social, psychological, legal or economic risk to you due to your participation in this study.

Potential Benefits:

At this time, the available research literature is inconclusive as to the level of accuracy emergency management professionals have when assessing citizen preparedness and what factors may affect their level of accuracy. It is the intent of this study to be able to make general conclusions as to why county emergency managers feel their citizens may be more or less prepared than the average citizen. These conclusions will be based on a myriad of facets including: perceptions of citizen risk awareness and preparedness, perceptions of the preparedness of friends and family, county characteristics, emergency manager characteristics, workplace capacity and effort to promote preparedness. These conclusions will assist in creating a broad understanding of how citizen preparedness is perceived by the professionals who are tasked with ensuring its continuing advancement.

Assurance of Confidentiality:

All survey data will be kept confidential. During the data analysis process any identifiable characteristics of a participant, both personal and geographic, that could be linked to an individual will be removed. Each participant's personal information will be kept confidential and will not be used in the reports that may be written from this research project.

Voluntary Participation and Withdrawal from the Study:

Your participation in this study is entirely voluntary and you may withdraw at any time. Your decision whether or not to participate will not affect your present or future relationship with

North Dakota State University or any of its affiliates. If you choose to participate, you are free to withdraw your consent and terminate your participation at any time.

Offer to Answer Questions:

If you have questions about this research project, please feel free to contact me: Breanna Koval at (701)388-7412 or Breanna.Koval@ndsu.edu or my research advisor: Dr. George Youngs at (701)231-8941 or George.Youngs@ndsu.edu. If you have any question about the rights of human research participants, or wish to report a research-related grievance, contact the North Dakota State University Institutional Review Board Office at (701)231-8908 or ndsu.irb@ndsu.edu.

APPENDIX C. SURVEY INVITATION LETTER

[Insert Date]

Dear [insert participant name here],

My name is Breanna Koval. I am the emergency management director for Wilkin County, MN and am also completing graduate work at North Dakota State University. I am contacting you to ask for your help in a study of citizen preparedness. The study is an exploratory study of Minnesota emergency managers' perceptions of citizen preparedness. This study will help to understand how we as emergency managers perceive the preparedness of citizens in our jurisdictions.

I am contacting all county emergency management directors in the state of Minnesota to explore this topic.

At this at time, the available research says very little about how our perceptions of preparedness match actual preparedness levels especially for areas as large as counties. This study will assist in creating a broad understanding of how citizen preparedness is perceived by the professionals who are tasked with ensuring its continuing advancement.

Your answers to this survey will be kept confidential and will be released only as summarized data in which no individual's data can be identified. Each participant's personal information will be kept confidential and will not be used in any reports. Although your participation in this survey is voluntary, your assistance would be greatly appreciated.

In about two weeks you will receive an email containing the link to the survey. Multiple pretests of the survey with county emergency managers outside of Minnesota have found that the survey will take 10-15 minutes to complete at most. If desired, the final results of the study can be provided.

If you have any questions about this study feel free to contact us: Breanna.Koval@ndsu.edu or (701)388-7412 and Dr. George Youngs at George.Youngs@ndsu.edu or (701)231-8941.

I would like to thank you in advance for your participation in this research project.

Sincerely,

Breanna Koval

Emergency Management Program

North Dakota State University

APPENDIX D. SURVEY INVITATION EMAIL

[Insert Date]

Dear [insert participant name here],

Two weeks ago I sent you a letter asking for your help in a study of how we as county emergency management directors perceive citizen preparedness. This study will help to understand how county emergency managers perceive the preparedness of the citizens in their jurisdiction and what factors may affect perceptions.

Thus, I am contacting all county emergency managers in the state of Minnesota to gather a substantial number of participants. The data will assist in creating a broad understanding of how citizen preparedness is perceived by the professionals who are tasked with ensuring its continuing advancement.

Your answers to this survey will be kept confidential and will be released only as summarized data in which no individual's data can be identified. Each participant's personal information will be kept confidential and will not be used in the reports that may be written from this research. Although your participation in this survey is voluntary, your assistance would be greatly appreciated.

It is my hope that you will complete the survey and assist in this research project. As noted in my earlier letter to you, multiple pretests of the survey with county emergency managers outside of Minnesota have found that the survey will take 10-15 minutes to complete at most. If you would like to participate, please complete the survey by [insert completion date].

Please access the survey at:[insert link here] Thank you!

If you have any questions about this study feel free to contact us: Breanna.Koval@ndsu.edu or (701)388-7412 and Dr. George Youngs at George.Youngs@ndsu.edu or (701)231-8941.

I would like to thank you in advance for your participation in this research project.

Sincerely,

Breanna Koval

Emergency Management Program

North Dakota State University

APPENDIX E. SURVEY

Welcome and Informed Consent

Welcome. You have been invited to participate in a survey for an exploratory study of Minnesota emergency managers' perceptions of citizen preparedness. This study is being conducted under the auspices of the Emergency Management Program at North Dakota State University. The intent of this study is to understand how county emergency managers determine the preparedness level of the citizens in their jurisdiction.

All survey data will be kept confidential. During the data analysis process any identifiable characteristics of a participant, both personal and geographic, that could be linked to an individual will be removed. Each participant's personal information will be kept confidential and will not be used in the reports that may be written from this research project. In addition, there should be no discomfort or physical, social, psychological, legal or economic risk to you due to your participation in this study.

Your participation in this study is entirely voluntary and you may withdraw at any time. Your decision whether or not to participate will not affect your present or future relationship with North Dakota State University or any of its affiliates. If you choose to participate, you are free to withdraw your consent and terminate your participation at anytime.

If you have questions about this research project, please feel free to contact me: Breanna Koval at (701)388-7412 or Breanna.Koval@ndsu.edu or my research advisor: Dr. George Youngs at (701)231-8941 or George.Youngs@ndsu.edu. If you have any question about the rights of human research participants, or wish to report a research-related grievance, contact the North Dakota State University Institutional Review Board Office at (701)231-8908 or ndsu.irb@ndsu.edu.

1. To grant consent, please choose one of the options below:

- Yes, I grant consent and am willing to participate in this study.
- No, I do not grant consent and would not like to participate in this study.

Citizen Risk Awareness

This section of the survey examines the level of perceived risk that is perceived for different hazards. For this section you will be asked to do three things. The first is to estimate the percentage of citizens in your county that you feel agree with the following statements. The second is to estimate the same information for people you personally know (i.e. friends and family). Thirdly, you will be asked to address the same statements personally. Thank you.

Citizen Risk Awareness

2. Please indicate the percentage of citizens in your county that would predict each of the following events to be either likely or very likely to ever occur in their community...

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Natural Disaster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terrorism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous Materials Accident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disease Outbreak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Please indicate the percentage of people you personally know (family members, relatives, friends, etc.) that would predict each of the following events to be either likely or very likely to ever occur in their community...

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Natural Disaster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terrorism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous Materials Accident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disease Outbreak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Citizen Risk Awareness

4. Please indicate how likely you believe each of the following events are to occur in your county...

	Not at all likely				Very likely to happen
Natural Disaster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terrorism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous Materials Accident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disease Outbreak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Citizen Preparedness: Emergency Supplies

For the next 3 sets of questions, I would like to ask you about specific things that you think citizens in your jurisdiction have done to prepare themselves for an emergency/disaster. Thank you.

Citizen Preparedness: Emergency Supplies

5. (1 of 3) Please indicate the percentage of citizens in your jurisdiction that you feel have each of the following supplies reserved for a disaster/emergency.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Bottled Water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaged Food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flashlight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Citizen Preparedness: Emergency Supplies

6. (2 of 3) Please indicate the percentage of citizens in your jurisdiction that you feel have each of the following supplies reserved for a disaster/emergency.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Portable, battery powered radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Batteries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
First-aid kit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eyeglasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Citizen Preparedness: Emergency Supplies

7. (3 of 3) Please indicate the percentage of citizens in your jurisdiction that you feel have each of the following supplies reserved for a disaster/emergency.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Medications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Photocopies of personal identification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial documents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Preparedness of People You Know: Emergency Supplies

For the next 3 sets of questions, I would like to ask you about specific things that you think people you personally know (family members, relatives, friends, etc.) have done to prepare themselves for an emergency/disaster. Thank you.

Preparedness of People You Know: Emergency Supplies

8. (1 of 3) Please indicate the percentage of people you personally know (family members, relatives, friends, etc.) that you feel have each of the following supplies reserved for a disaster/emergency.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Bottled Water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Packaged Food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flashlight	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

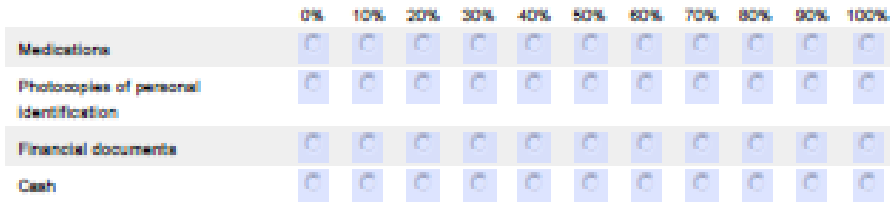
Preparedness of People You Know: Emergency Supplies

9. (2 of 3) Please indicate the percentage of people you personally know (family members, relatives, friends, etc.) that you feel have each of the following supplies reserved for a disaster/emergency.

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Portable, battery powered radio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Batteries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
First-aid kit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eyeglasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Preparedness of People You Know: Emergency Supplies

10. (3 of 3) Please indicate the percentage of people you personally know (family members, relatives, friends, etc.) that you feel have each of the following supplies reserved for a disaster/emergency.



Personal Household Preparedness

For this next set of questions, I would like to ask you about your perception of the preparedness level of your household.

11. On a scale of one to five, with one being “not at all prepared” and five being “very prepared,” how prepared is your household for an emergency or disaster?

Not at all prepared	2	3	4	Very prepared
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Personal Household Preparedness: Emergency Supplies

Similar to previous sections, I would like to ask you about specific things that you personally have done to prepare yourself and/or your household for an emergency/disaster.

12. Please indicate which of the following supplies you personally have reserved for a disaster/emergency.

	Yes	No
Bottled Water	<input type="radio"/>	<input type="radio"/>
Packaged food	<input type="radio"/>	<input type="radio"/>
Flashlight	<input type="radio"/>	<input type="radio"/>
Portable, battery powered radio	<input type="radio"/>	<input type="radio"/>
Batteries	<input type="radio"/>	<input type="radio"/>
First-aid kit	<input type="radio"/>	<input type="radio"/>
Eyeglasses	<input type="radio"/>	<input type="radio"/>
Medications	<input type="radio"/>	<input type="radio"/>
Photocopies of personal identification	<input type="radio"/>	<input type="radio"/>
Financial documents	<input type="radio"/>	<input type="radio"/>
Cash	<input type="radio"/>	<input type="radio"/>

Confidence in Perceptions of Citizen Preparedness

For this set of questions, please select a response that indicates how confident you are in your perceptions of citizen preparedness.

13. Overall, how confident are you of your perceptions of the level of citizen preparedness in your jurisdiction? (please select one response)

- Not at all Confident
- Slightly Confident
- Moderately Confident
- Very Confident
- Fully Confident

Confidence in Perceptions of Preparedness

14. Overall, how confident are you of your perceptions of the level of preparedness for your friends, family and relatives? (please select one response)

- Not at all Confident
- Slightly Confident
- Moderately Confident
- Very Confident
- Fully Confident

Dimensions of Preparedness

Earlier questions in this survey asked you to estimate the extent to which the general population in your county has engaged in various types of preparedness. The next set of questions explores different dimensions of preparedness. Please indicate the subgroup of each dimension that you think would be LEAST LIKELY to be prepared. Thank you.

Dimensions of Preparedness

15. Age (please select only the category you believe is LEAST LIKELY to be prepared)

- 18 to 34
- 35 to 54
- 55 and older

16. Gender (LEAST LIKELY to be prepared)

- Male
- Female

17. Household Income (LEAST LIKELY to be prepared)

- Less than \$25,000
- \$25,000 to \$50,000
- \$50,000 to \$75,000
- \$75,000 or more

18. Disaster Volunteerism (LEAST LIKELY to be prepared)

- Volunteered in community safety or post-disaster
- Never volunteered

19. Education (LEAST LIKELY to be prepared)

- Less than 12th grade (no diploma)
- High school graduate or GED
- Some college but no degree
- Associate degree in college
- Bachelor's degree
- Master's degree
- Doctorate degree

20. Race (LEAST LIKELY to be prepared)

- White
- Black or African American
- Hispanic
- All other races

21. Employment (LEAST LIKELY to be prepared)

- Work full-time
- Work part-time
- Student
- Unemployed
- Retired
- Other

Emergency Manager Characteristics

This last set of questions will ask information about your current job, and your county emergency management program.

Emergency Manager Characteristics

22. What is your age?

23. What is your sex?

Female

Male

24. What is the highest level of education you have completed?

Less than 12th grade (no diploma)

High school graduate or GED

Some college but no degree

Associate degree in college

Bachelor's degree

Master's degree

Doctorate degree

25. How many years have you been employed as a county emergency manager?

26. How many years have you worked in the field of emergency management?

Less than 1 year

1 to 5 years

6 to 10 years

11 to 15 years

16 or more years

27. Which Minnesota county are you currently employed with?

County Name

28. Do you have any other positions or responsibilities in your county in addition to being the county emergency manager (e.g. sheriff, fire chief, county assessor, veterans administration, 9-1-1 dispatch, etcetera)?

Yes

No

If yes, what additional position(s) are assigned to you

29. In your current position, how many hours per week are spent on emergency management activities?

30. In your current position, how many hours per week are spent on promoting preparedness activities?

31. How many individuals are employed by your county government to do emergency management?

- 1
- 2
- 3
- 4 or more

32. Since you have been employed with your current county has your jurisdiction experienced any presidentially declared disasters that were granted individual assistance?

- Yes
- No

Thank You

Thank you for your participation in this research study. We appreciate your input and will gladly share the final write-up of the research with you upon request.

If you should have any final questions about the research project, please contact myself at (701)388-7412 or by email at Breanna.Koval@ndsu.edu or the research advisor for the project, Dr. George Youngs, at (701)231-8941 or by email at George.Youngs@ndsu.edu.

APPENDIX F. SURVEY FOLLOW-UP EMAIL

March 24th, 2014

Dear [insert participant name here],

Last week I sent you an email invitation to participate in a study of how we as county emergency management directors perceive citizen preparedness.

If you have already completed the survey, please accept my sincere thanks. If not, please do so today. I am especially grateful for your help because it is only by asking people like you to share your thoughts that we can understand how emergency managers view preparedness at the local level.

If you did not receive the survey link, or if you misplaced the link here it is:

<https://www.surveymonkey.com/s/mnemergency>

Sincerely,

Breanna Koval
Emergency Management Program
North Dakota State University