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EXEMPLIFICATION EFFECTS
THROUGHOUT DISASTER STAGES IN SOCIAL MEDIA

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Communication and Information
at the University of Kentucky.

By

Robert George Rice

Pikeville, Kentucky

Co-Directors: Dr. Patric Spence, Associate Professor of Communication
and Dr. Brandi Frisby, Associate Professor of Communication

Lexington, KY

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ABSTRACT OF DISSERTATION

EXEMPLIFICATION EFFECTS THROUGHOUT DISASTER STAGES IN SOCIAL MEDIA

Two studies were performed to research potential exemplification effects throughout various stages of natural disasters. Exemplification theory (Zillmann, 1999, 2002) promotes the use of exemplars, media examples, because of their potential ability to motivate risk related information seeking and their possible influence in optimizing protective action (Zillmann, 2006). Study one examined potential exemplification effect differences between various stages of natural disasters. Study two was designed to test for differences in trust, perceptions of severity, and intentions to volunteer depending on the organization type supplying related exemplars in social media. Results indicate that exemplification effects do not differ depending on disaster stage. However, exemplification effects do depend on the source of the exemplars. Furthermore, differences in perceptions of trust were detected between the two organizations providing the exemplars. And, intentions to volunteer vary depending on the current disaster stage. Specific findings, related theoretical implications, and practical suggestions are discussed.

KEYWORDS: Exemplification, Emergent Citizen Group, Communication Infrastructure Theory, Trust, Disaster Stages, Social Capital

Robert Rice

July 9, 2018

Date

EXEMPLIFICATION EFFECTS THROUGHOUT DISASTER STAGES IN SOCIAL
MEDIA

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CHAPTER 1: INTRODUCTION

Exemplification Imagery and Public Safety

Exciting and unusual examples are prolific in the realm of communication because of their pronounced ability to draw attention. Vivid examples, or exemplars, are often used in academia to provide learning examples, in marketing and public relations to promote products and services, in daily conversational rounds to build rapport and in the news to gain viewership. Media examples often consist of quotes, images and stories. Victim sound bites, one form of media examples, may convey “the human drama precipitated by the events under consideration in ways that a reporter’s verbal description can not” (Aust & Zillmann, 1996, p. 788). Zillmann (2006) suggests that media examples may be beneficial in aiding those who have significant health and safety information to disseminate to the public. Using striking exemplars can help peak attention which may lead to information seeking or protective action. However, communication literature contains limited studies that explore the relationship between various media examples and their potential effectiveness to provoke the search for public safety information. Furthermore, the media landscape has changed quickly in the last few decades from a primarily vertical structure to one that is both vertical and horizontal because of technological communication advancements. Therefore, the purpose of this research is to focus on how media examples can be used along with important safety instruction in the context of complex risks and crises in order to enhance instructional effectiveness regarding Web 2.0 technologies. More precisely, this research is designed to explore how exemplars from various sources, and through the multiple stages of complex natural

disasters, may elicit different intentions to seek information and volunteer efforts, resources, and/or information.

Theoretical Background

Exemplification theory of media effects (Zillmann, 1999, 2002) suggests that various media examples manifest influence in different ways. Certain media content has more influence on audience perceptions than others, and the difference in influence may change over time. More specifically, exemplars that are concrete, vivid, and iconic are hypothesized to have greater perceptual influence than vague, flat, or mundane exemplars.

Zillmann (2006) describes the physiological processes involved in the mind that explains the superior coding of emotional memories. In short, enhanced memory encoding is thought to result from the heightened state of mind present in threatening situations. These super-coded memories are more easily aroused in the assessment of current or future risks. Zillmann (2006) explains “The significant consequence of such facilitation is that affect-evoking exemplars spontaneously avail themselves whenever the exemplified issues are encountered and contemplated” (p. S224). Unemotional memories are less cognitively available and may be neglected in times when relevant information is needed.

Furthermore, exemplars may have implications for the promotion of public safety (Zillmann, 2006). Implementing risk communication is harder than simply imagining and creating risk messages (Palenchar & Heath, 2007). To create listener response, risk communicators need to inform the public about a credible threat (Perreault , Houston, & Wilkins, 2014). Exemplars, in the form of images, quotes, and stories may peak listener

interest and arouse intentions to take protective action when most needed. However, the relationship between exemplars and effective instruction has not been studied in depth. Furthermore, because of ubiquitous social media, researchers need to understand how exemplars fit into newer communication technologies.

Risks, Crises, and Extreme Events

Foundationally, a crisis is a risk manifested (Heath & O’Hair, 2009). When a risk develops into a crisis, disaster, or other extreme incident, action needs to be taken. These potentially consequential situations “by their nature, come as a shock and threaten the well-being of individuals” (Frisby, Sellnow, Lane, Veil, & Sellnow, 2013, p. 251). Risk communicators and public servants have an obligation to provide the public with knowledge on how to avert risk. Also, when a crisis is detected early, there is a chance that potential harm may be reduced (Veil, 2011; Lachlan & Spence, 2007). Reducing harm is one of the main purposes of risk and crisis communication. Mitigating and augmenting actions that may help in a crisis are common themes in risk literature; “A ‘good’ organization can utilize risk communication to empower relevant publics by helping them to develop and use emergency responses that can mitigate the sever outcomes in the event of a risk event” (Palenchar & Heath, 2007, p. 127).

Citizens often feel a need to take action during a crisis. McComas (2010) suggests “People’s concern about risk, coupled with their need to ‘do something,’ has underscored the need to find appropriate and meaningful ways to engage citizens in risk management” (p. 461) and that people have a “growing demand for a sense of agency or control over their exposure” (p. 462).

When a disaster manifests, the purpose of risk communication is to direct action that will shield the public from harm (Rod, Botan, Holen, 2012). Researchers report that in perilous situations “such as food recalls, epidemics, hazardous weather events, floods, wild fires, earthquakes, bio-terrorist attacks, and chemical or toxic gas spills, those at risk need to learn quickly how to protect themselves” (Sellnow et al., 2015, p. 420). Furthermore, messages with solid instruction increase perceptions of self-efficacy (Frisby, Veil, & Sellnow, 2014). However, personal perceptions of risk determine whether or not crisis messages influence the public to take action (Lachlan, Burk, Spence, & Griffin, 2009). Information needs to be shared with those potentially susceptible. Information can also be shared that instructs those at risk what to do to help not just themselves but their communities. Additionally, those susceptible may need to be intentionally motivated to seek that information. Exemplars may help fill this purpose by peaking attention when important information is most needed.

Natural disasters vary in their levels of predictability. Each natural disaster, such as a tsunami, winter storm, flooding, etc., has its own timeline of events that span from rapid to slow. These disasters create risks, are not fully understood, and create information needs in public. To help the public avert a crisis, it may not be enough to simply warn them of a risk. To influence protective behaviors, instruction is needed in combination with hazard details (Sellnow & Sellnow, 2010). In order to get people to seek disaster information and related instruction, the first step is to make them want that information. Exemplars are a commonly used media device to gain attention during crises such as natural disasters. Furthermore, exemplars are suggested to have relevance in aiding the effectiveness of public safety information because they peak interest in safety

information and may motivate action (Zillmann, 2006). Research suggests “more information sharing during a crisis event does not necessarily translate into appropriate action” (Sellnow et al., 2016, p. 420). Therefore, studying exemplars in relation to information seeking is an important research avenue to probe further. Exemplars have the potential to stimulate information seeking. One current way that exemplars are abundantly shared is through social media.

Social Media, Image Sharing, Instruction

A crisis such as a natural disaster calls for quick and timely communication (Sutton, League, Sellnow, & Sellnow, 2015). Risk communicators need to inform the public how to act. By connecting early with the public, information may be provided that enables self-protective action. Social media offers the capacity to fulfill this need. Rapid information will empower those at risk to take protective action. Participation in risk management, as well as citizen awareness, has been enhanced by the ability to share information accessed on the internet (Chung, 2011).

In the recent past, communicators relied on media gatekeepers to gain access to a broad audience (Tambini, 1999; Veil & Ojeda, 2010; Spence, Lachlan, Westerman, & Spates, 2013) but new media allows for the capacity to get and provide direct information. There is not a strict selection process for those who want to transmit information. In essence, the gate has been thrown wide open and the gatekeeper is nowhere to be seen. Individuals can now access “countless resources” by themselves (McComas, 2010) and can share the same information with whomever they choose. One of the newest methods to share information is through Computer Mediated Communication.

Computer Mediated Communication (CMC), through social media, has become user-friendly as well as accessible to many (Tambini, 1999). Social networking sites allow relationship maintenance and building capabilities (Ellison, Steinfield, and Lampe, 2007). The forms of connections are often based on commonly shared interests, work issues and romance (Ellison et al., 2007). These affordances make new communication media, when compared to traditional print and broadcast media, more interactive and malleable (Tambini, 1999). These new media capabilities also lend themselves to the sharing of exemplars and essential safety information during crises.

Rod, Botan, and Holen (2012) studied people's intentions to follow evacuation instructions during a natural disaster. They found several key determinants of those who are willing to follow the recommend evacuation instructions. These determinants included having useful information, having a graduate degree, living in areas that had a history of disaster and trust in experts. Because having useful information is an essential component of taking safety precautions, all avenues of easily accessible communication that aid information sharing should be explored. Social media provide the opportunity for necessary instructional information to be shared quickly during crises (Rice & Spence, 2016). Social media also have the ability to share exemplars that may increase the effectiveness of instruction. Social media may contain both exemplars with the ability to project a credible risk and the relevant instructional content along with it. And, exemplars serve as cognitive prods for information seeking (Zillmann, 2006).

Aust and Zillmann (1996) report that "Visually vivid and emotionally strong exemplifications can be obtained and presented more easily than ever before" (p. 788).

This is even more so in the age where modern citizens typically carry a phone with camera capabilities.

Nah, Yamamoto, Chung, and Zuercher (2015) describe that citizen journalists are contributing to some newspapers content. Citizens can also have their own news content or broadcast channels if they really want to. The same channels used by the media to communicate with the public are now easily accessible and usable by ordinary citizens. Free services include social media platforms and well as website hosting.

Social media allows public safety organizations the chance to inform and share information directly. And, grassroots media systems may fill gaps in the reduced local coverage provided by mainstream newspapers (Chen, et al., 2012). Because illuminating a credible threat is foundational to creating intentions to act (Perreault, Houston, & Wilkins, 2014), researchers need to explore how exemplars used in social media may increase intentions to take self-protective action during a crisis.

Mobile communication continues to rise (Miller, 2014) in an already technologically saturated society. Researchers even suggest that there is a “mobile youth culture” (Abeele, 2015). Therefore, this research seeks to explore exemplification effects in social media. More specifically, this research seeks to determine if exemplified events may lead those using social media to seek or utilize instructional messages contained in social media messaging. And, because of the widespread access and ability to use social media, the research seeks to explore how various sources of exemplars may influence information seeking, the likelihood to volunteer, and intentions to voluntarily share disaster images or details with public safety organizations.

Furthermore, exemplars may be most vital in instructional relevance before a crisis such as a natural disaster hits. Research needs to explore what stages in crises that exemplars will be most effective in getting audiences to take self-protective action. Researchers should not ignore the varied stages, the ebb and flow, of natural disasters and assume messaging effects will be the same. Most exemplars are distributed after a crisis because that is when they are available. However, it may be important to share related exemplars in a pre-crisis stage to help citizens understand the potential consequences of what may happen – therefore motivating them to undertake self-protective action. Nevertheless, research should be undertaken to explore exemplification effects in multiple stages of disasters for a more complete understanding of exemplars and information seeking.

Multiple experiments were conducted to investigate research questions involving exemplification and instruction through social media during various crisis stages. The first experiment was created to investigate if exemplars elicit different perceptions of storm severity and intentions to seek information depending on what stage an exemplified disaster is in. Six conditions were used in a post-test only experiment. The second experiment was created to explore differences in perceptions of credibility and intentions to volunteer time, money, or information, throughout disaster stages depending on the exemplar source and disaster stage. Furthermore, the second experiment also tested for stage differences using a different type of natural disaster. A 3 (pre-crisis, crisis, post-crisis) x 2 (government vs emergent citizen group) experiment was performed.

Organization of Proposal

This research proposal is comprised of three chapters. Research context, problems, and study designs are outlined in Chapter 1. Chapter 2 includes an exhaustive review of exemplification literature and related instructional implications. Chapter 2 also explores disaster stages and communities in context of the changing media ecology. Chapter 3 includes a detailed explication of research design, participant recruitment techniques, instruments of measure, and variable conceptualizations.

Chapter Summary

Exemplars, serving as mental motivators (see Zillmann, 2006), can increase the potency of risk messages. Furthermore, information dissemination and acquisition models are in flux because of the increase in use of mobile technology, an increase in cell phone capabilities and greater ease of use. And, disasters flow through various stages that produce parallel mental states in the public. Therefore, the purpose of this research is to create a stronger understanding of exemplification effects in social media in the context of evolving information pathways, sharing capabilities, and increased citizen participation during various disaster stages.

CHAPTER 2: LITERATURE REVIEW

Exemplification theory (Zillmann, 1999, 2002; Zillmann & Brosius, 2000) is a theoretical framework for understanding media effects. The basic assumption of exemplification theory is that some information is more influential on perceptions than other information. More specifically, base-rate information, such as quantitative distributions, is less likely to influence perceptions than more emotional or vivid content (Zillmann, 1999). Researchers and social scientists utilize theories as “guidebooks for interpreting, explaining, and understanding the complexity of human relations...enabling us to understand relationships and interpret events” (Littlejohn, 2001, p. 18).

Exemplification research is used to help understand how overall perceptions of mediated topics are influenced by various media examples. This section will begin with an overview of exemplification theory. Next, a critique of the theory will be offered together with the potential of exemplification theory to be applied to crisis research. Examples of how exemplification theory has been applied to specific phenomena will be provided throughout.

Theoretical Overview

Exemplification theory is largely a conceptual model of media effects. However, exemplars are used in multiple forms of communication including interpersonal, educational, and mass media (Zillmann, 1999). Furthermore, Zillmann and Brosius (2002) suggest that exemplars influence all types of human communication. An exemplar is “an event subsumed in a population or subpopulation” of events (Zillmann, 1999, p. 78). A large collection of similar events represents a population. A sample represents a smaller proportion of the larger population.

Representation “precision decreases with the number of uncontrolled characteristics and increases with the number of exemplars” (Zillmann, 1999, p. 78). However, not all media examples influence perceptions in the same way. And, some media examples penetrate and stick to the mind of media consumers easier than others. Exemplars vary in vividness. Vivid details, according to the propositions of exemplification theory, are better remembered than more basic information. Several cognitive mechanisms help explain the mental processes that lead to differences in the storage and processing of mediated information.

Three mechanisms that help explain exemplification effects are: the representative heuristic, priming, and the availability heuristic (Zillmann, 1999). The representative heuristic is the concept that a few general samples of examples will influence overall perceptions of a media topic. This mental projection “entails a leap from detecting an abstraction to applying it to other situations and contexts...and is part and parcel of exemplification” (Zillmann, 1999, p. 73). The availability heuristic suggests that dramatic and often activated representations will be more mentally accessible than less dramatic representations and those that are infrequently signified. The concept of priming suggests that recently activated memories will be more readily accessible than previous memories. Zillmann (2002) suggests that another heuristic plays a part in exemplification effects. This heuristic has been termed the quantification heuristic as it describes the consistent surveillance of “the prevalence of exemplars as well as their relative distributions” (Zillmann, 2002, p. 27). The quantification heuristic suggests the existence of an unconscious quantitative mental storehouse of exemplars and exemplar characteristics.

Perfect representation of any issue or topic by the media is unlikely. Zillmann (1999) reports that “exemplification is bound to be less than perfect” (p. 74). And, that media producers can take multiple steps to decrease inaccurate issue perceptions. First, report when media examples are highly singular. And second, admit when precise information about similar event statistics is not available. These procedures may be helpful because inferences made from exemplars are often not more than thoughtless assumptions.

The legacy media are responsible for most exemplar distribution (Zillmann, 1999). Zillmann (2002) suggests that media organizations should be careful when deciding what to include in broadcasts in order to prevent general misconceptions. However, certain media specialties often utilize atypical examples. For example, advertising and public relations professionals may create exemplars that are inaccurate because “nonsupportive and challenging exemplars are banned as counterproductive” (Zillmann, 1999, p. 85).

Three assumptions are the primary basis for most exemplification propositions. Zillmann (2002) explains that concrete events are more likely to be mentally absorbed than drab or intricate details. And, details of boring events are not processed as much as events that attract higher interest. Because of the lesser attention paid to irrelevant events, they are not stored as strongly as more relevant information. Finally, wide numerical generalizations are made on the basis of events holding similar characteristics.

Dubin (1978) suggests that theoretical propositions are “truth statements about the model” (p. 10). Zillmann (2002) assembled six exemplification propositions based on the prior mentioned assumptions about mental storage, retrieval, processing, and

generalizing. Generally, the strength of these propositions is also time related. As time goes on, the predictions are more likely to be true. First, abstract representations are less influential than concrete accounts of an issue. Second, concrete exemplars, especially if they are iconic, are going to be more influential on perceptions than abstract exemplars. Third, emotionally exciting exemplars are more influential on perceptions than unemotional exemplars. Also, emotional exemplars are thought to increase in strength of perceptual influence when they are also iconic. Fourth, the proportion of characteristics in a set of media exemplars will generally be assumed as representative of the wider distribution of the exemplified phenomenon. Fifth, when both emotional and unemotional exemplars are provided, the emotional ones will be overgeneralized. And finally, media attention to particular aspects of exemplars will create public perceptions that mimic the highlighted attributes.

Clarifications and Extensions

Exemplification effects are suggested to increase when exemplars used are vivid, iconic, and emotional (Zillmann, 2002). However, recent research has discovered other variables that may increase exemplification effects. The way a message is framed can influence exemplification effects. For example, Yu, Ahern, Connolly-Ahern, and Shen (2010) studied how exemplars may influence perceptions of risk about developing fetal alcohol spectrum disorder. The authors found that loss-framed exemplars produced an increased perception of issue severity. Westerman, Spence, and Lachlan (2009) found that perceptual realism and spatial presence can increase exemplification effects in disaster news regarding a hurricane. And, Westerman, Spence, and Lin (2015) found that social presence, a sense of being connected to those in news stories, increased

exemplification effects about bed bugs. Also, group affiliation can moderate the influence of exemplars (Arpan, 2009).

Metatheoretical Underpinnings

Exemplification theory appears to fit the post-positivist paradigm. A realist ontology, assumed by post-positivism, suggests that the world is tangible and measurable (Davis, Gallardo, & Lachlan, 2009). Extant exemplification research has been completed primarily with quantitative research methods. And, Zillmann (2002) suggests specific causal propositions in order to make and test research predictions. These propositions are intended to both inspire researchers and inform practitioners. Additionally, the propositions of exemplification theory align neatly with post-positivism. A theoretical model is considered scientific “if, and only if, its creator is willing to subject it to an empirical test” (Dubin, 1978, p. 12). Theories in the realm of post-positivism are used to create and test hypotheses about an objective reality on the basis of causal statements (Baxter & Braithwaite, 2008). Also, application to a wider population is another indicator of the post-positivism paradigm (Allen, Titsworth, & Hunt, 2009). Zillmann (2006) suggests that exemplification theory can be broadly applied to situations that are pertinent to public safety. The metatheoretical background of this theory provides a strong foundation for crises applications that call for systematically validated communication strategies. Next, the theory will be examined more closely in accordance with common theoretical benchmarks.

Theoretical Assessment

Scientific theories can be measured for utility and value in many ways. Chaffee & Berger (1987) report an extensive list of criteria to judge a theory including: explanatory

power, predictive power, parsimony, falsifiability, internal consistency, heuristic provocativeness, and organizing power. This list will now be used to assess exemplification theory.

Explanatory power is concerned with the range of phenomena that can be explained by a theory and the ability of the theory to suggest probable explanations related to theoretical propositions (Chaffee & Berger, 1987). Exemplification theory provides excellent explanatory power. Zillmann (1999, 2002) explains the specific cognitive heuristics that account for exemplification effects such as priming and representativeness. Furthermore, Zillmann (2002) used the aforementioned heuristics as the basis for the six main propositions of exemplification theory. Exemplification theory provides specific explanations for the better storage and retrieval of different types of exemplars.

Because the underlying cognitive mechanisms concerning the superior storage of certain examples have been carefully accounted for, exemplification theory has high predictive power. The theory has six main propositions that make specific predictions (Zillmann, 2002). The predictions most often studied concern the idea that concrete, emotional, and iconic examples are mentally sticky in comparison to more abstract information. For example, Tran (2012) found that as vividness increased, exemplar valence became more influential on perceptions.

Parsimonious, or simple, theories “are preferred to more complex ones, assuming that both predict and explain equally well” (Chaffee & Berger, 1987, p. 104). Exemplification theory provides a simple cognitive explanation as the basis of exemplification effects. Certain types of examples are more mentally stimulating, stored

easier, and retrieved easier than other examples, and are therefore more likely to influence overall perceptions of an issue or topic.

Falsifiability is the ability to show that something is not true at all times. The propositions of exemplification theory have shown consistency in many settings but have been found false in some instances. For example, Yu et al. (2010) found no statistically significant difference between exemplified and statistical information about drinking alcohol during pregnancy. However, researchers have found that there are situations where basic information is more highly processed (Zillmann, 2002), and this may account for these findings.

Internal consistency is when the “internal logic of a theory can be assessed independently of empirical tests. Theoretical propositions should be consistent with each other” (Chaffee & Berger, 1987, p. 104). Exemplification theory is consistent in multiple ways. Zillmann (2002) builds propositions in a highly logical order. The author suggests first that concrete exemplars will be more influential than abstract exemplars. Next, that concrete exemplars will be more influential if they are iconic. After that, emotional exemplars are suggested to be more influential than unemotional exemplars, especially if they are iconic. This ordering of propositions shows that the connection between concrete, emotional, and iconic exemplars are closely tied together. Furthermore, there is high consistency in exemplification propositions concerning the generalization that the influence of vivid, iconic, and emotional exemplars is suggested to increase over time.

Heuristic provocativeness is the idea that theories will lead to new hypotheses (Chaffee & Berger, 1987). Exemplification theory has been applied in a wide variety of settings. However, there has not been a systematic building of new propositions to add to

the theory. Researchers have found other variables that increase exemplification effects, however, the original six propositions remain.

Finally, exemplification theory has strong organizing power. Organizing power is the idea that a theory generates and organizes knowledge well (Chaffee & Berger, 1987). The cognitive mechanisms at the root of exemplification theory are similar to those in priming theory (e.g., Hart & Middleton, 2014) and cultivation theory (e.g., Morgan, Shanahan, & Signorielli, 2015). Exemplification theory does well at combining literature on media, psychology, and brain science (see Zillmann, 2006). Because exemplification theory provides strong explanatory power, is predictive in nature, and is internally consistent, it holds good potential for applications where outcomes need to be as accurate as possible – such as crises and disasters that put the public at risk. Next, exemplification theory will be applied to crisis research.

Exemplification and Crisis/Disasters

Exemplification theory, rooted in solid cognitive science and having good internal consistency, provides a strong framework for the study of risk and crisis communication. Furthermore, because of the highly predictive nature of exemplification theory, researchers and practitioners may be able to use the theory to compose messages that are more helpful to the public. Base-rate information is often ineffective at promoting threat reduction (Zillmann, 2006). However, exemplars may motivate information seeking and protective action. For example, exemplars have been shown to influence behavioral intentions regarding food risks (Spence, Lachlan, Sellnow, Rice, & Seeger (2017). And, exemplification theory deals strongly with “assessments of risks to safety and health, as well as on contingent apprehensions that motivate risk avoidance and related protective

behavior” (Zillmann, 2006, p. S221). Because exemplification theory deals with perceptions of safety and self-protection, application to risk and crisis research fits the theory well. Emotional reactions from potentially threatening exemplars may motivate individuals to reduce personal susceptibility to harm. For example, when more emotional weeping is shown in news reports, viewer emotional reaction is stronger (Aust & Zillmann, 1996). Stronger emotional reactions can potentially lead to stronger intentions to take protective action.

When a risk is made salient, the “affective concomitants of risk assessment is considered to motivate risk-diminishing and risk-avoiding behavior” (Zillmann, 2006, p. S225). For example, perception of risky events, such as violent car-jackings, are more likely to be overestimated when more severe exemplars are used (Gibson & Zillmann, 1994). The point of using exemplars is not to create overestimations of risk. Zillmann (2006) actually defines ways to combat misperceptions that may be caused by exemplars.

The potential benefit of using exemplars in crises lies in the possibility to awaken a sense of risk when it could help those likely to be affected. Once a threat is perceived, deeper processing of messages, information seeking, and protective action may be more likely to occur. Zillmann (2006) suggests that “such contemplation is likely to produce the articulation of deliberate intentions to pursue particular safety – and health – protecting courses of action, not merely for the moment but over extended periods of time” (p. S226).

After a thorough review of brain science and exemplar research, Zillmann (2006) makes several recommendations for those communicating about health and safety issues. First, exemplified images are potentially helpful in the sense that they may prompt

individuals to take personal safety precautions. Second, emotionally exemplified images can foster “curiosity and therewith a need for further information about threats of harm and actions to avert harm or, at least, diminish its potential impact” (Zillmann, 2006, p. S232). This is noteworthy because research suggests “most people have difficulties in accurately imaging how they would be feeling were they to be involved in a natural hazard” (Siegrist & Gutscher, 2008, p. 773). And, to increase communication success, communication efforts may need to trigger motivation through explication of negative emotional consequences. Exemplars may fulfill this purpose.

Gibson and Zillmann (1998) found that, in negative news reports, participants were more influenced by direct quotes than paraphrased information. Furthermore, emotional testimonies about sickness were more influential on threat perceptions than non-emotional ones (Aust & Zillmann, 1996). Also, threatening exemplars can prompt more careful attention to news articles (Zillmann, Knobloch, & Yu, 2001; Knobloch, Hastall, Zillmann, & Callison, 2003). Researchers have discovered multiple reactions that occur after exposure to exemplars in the form of images.

Pictorial Exemplars

Images have been shown to influence perceptions of danger in a news article about riding a roller coaster (Zillmann, Gibson, & Sargent, 1999). Showing a picture that included someone being lifted into an ambulance in front of an amusement ride increased perceptions of danger in comparison to having either no picture or a picture of people having fun on the ride. And, including pictures of ticks and victims in news stories was found to increase perceptions of risk and the likelihood of getting Lyme disease according to the ethnicities included in the pictures (Gibson & Zillmann, 2000).

Westerman, Spence, & Lin, (2015) found that pictures increased perceptions of likelihood, perceptions of severity, and behavioral intentions concerning self-protection when exposed to bed bug pictures.

However, research has not been undertaken to find the optimal timing to use an exemplar during a crisis or disaster. For example, there are many models of crisis stages (see Sellnow & Seeger, 2013) that show the changing nature of crises. Because the public go through different emotions at different times, they may be more or less influenced by exemplars at different times. Various forms of exemplars may have different effects on the public depending on whether they are shown before a crisis, during a crisis, or after a crisis. Researchers should attempt to discover what times might be the best to distribute exemplars to promote information seeking and protective action. Also, multiple messages including exemplars could be tested for compounding influence. This may be necessary because citizens are likely to receive repeated messages throughout a crisis. The effects of multiple messages could be compared to the strength of effects during different stages of a crisis to see what variables are most influential. However repeated messages are outside the scope of the current research. Crisis stages and the various psychological states that citizens go through will be explored next.

Disaster Stages

Because “societal events such as natural disasters and terrorist attacks influence our thoughts and feelings” (Västfjäll, Peters, & Slovic, 2008, p. 6), researchers need to better understand how those feelings change over the duration of a disastrous event and how to best communicate accordingly. Recent disaster literature has offered multiple crisis models as a basis to study the evolving nature of disasters (see Sellnow & Seeger,

2013). However, “[the] dynamics of changing communication processes have yet to be described in detail” (Veil, Reynolds, Sellnow, & Seeger, 2008, p. 31S). Large-scale disasters, such as the Indian Ocean Tsunami and the 2010 Haiti Earthquake, are increasing in frequency and consequence (Ginter et al., 2006). And, disasters are not linear events in the sense that they show up, create consistent damage, and then disappear. Disasters are often unpredictable and vary in nature even over the course of a few hours. They can get stronger, attenuate, and then come back in more force than the initial onset. Mental states of those involved are likely to change depending on the current stage of the disaster, related force, proximity, and other variables. People want specific information that will help them understand what to do (Lachlan & Spence, 2007) in intense situations. In order to be more effective, communication efforts need to consider the apprehensions of those directly involved in the situation (Seeger, 2006).

Extreme Weather Events

Disasters can “decimate entire regions” (McConnell & Drennan, 2006, p. 59), are incredibly influential on society (Nelson, Spence, & Lachlan, 2009), “may send psychological ripples globally” (Västhjäll et al., 2008, p. 70), and can lead to perplexity and unpredictability (McConnell & Drennan, 2006). For an in-depth explication of the term disaster, see Perry (2007). Normalcy departs during a disaster prompting a need for people “to create order out of chaos and make sense of events that are not routine” (Coffelt, Smith, Sollitto, & Payne, 2010, p. 15). Some researchers term this moment a cosmology episode (Weick, 1993). And, other researchers suggest that a lack of useful information becomes paralyzing (Coffelt et al., 2010). This makes having relevant information a critical aspect of response communication. Researchers need to understand

how a disaster arises and subsides in order to effectively communicate overall. This is especially true because uncommon risks create elevated levels of confusion (Reynolds & Seeger, 2005). To help create a foundation for the process of communicating effectively during various moments in a crisis, a succinct overview of crisis stage-models is offered.

Crisis Stages

Many crisis frameworks exist. These models range from eight down to only three stages. The most complex model is a socio-temporal model of disasters that flows through eight stages of: pre-disaster, warning, threat, impact, inventory, rescue, remedy, and recovery (see Palen & Liu, 2007 for precise stage descriptions and references to historical sources concerning this model). The next model is the Turner (1976) six-stage model. This model is complex and descriptive but is largely focused on organizations that may be going through a crisis. The stages of the model include: starting point, incubation, precipitating event, onset, rescue, and full adjustment. Although the complexity provides a wide range of useful conceptual ideas, the framework has largely been utilized with organizations. Moreover, some stages are implicitly included in other stage models.

The Crisis and Emergency Risk Communication (CERC) framework is a five stage model. Reynolds and Seeger (2005) suggest that this model “emphasizes the developmental features of crisis and the various communication needs and exigencies of audiences at various points in the ongoing development of an event” (p. 49) and that this model takes a wider conceptual look at crisis than other models. The five stages include: pre-crisis, initial event, maintenance, resolution, and evaluation. This model holds a major strength by including many communicatively useful ideas but also includes stages that are implicit in other models.

Fink's four-stage model (see Fink, 1986) is often used for industrial and technological crises (Sellnow & Seeger, 2013). The four stages consist of: prodromal, acute, chronic, and resolution. The crisis arises in the prodromal stage. Crisis manifestation occurs at the acute stage. Recovery is performed in the chronic stage. And, finally, when the crisis has subsided and no longer remains a threat or impediment to normal operations, resolution has been attained. Because this model is most appropriate for man-made technological disasters and industrial situations, it will not be used to explain disaster scenarios.

The most heavily used (Sellnow & Seeger, 2013) and least intricate framework (at first look) is the three-stage model of crisis. The three stages consist of: pre-crisis, crisis, and post-crisis. Although this model appears to be simple, a closer look reveals the implicit complexity of the three-stage model. The pre-crisis stage is similar to the prodromal stage in Fink's (1986) model. Furthermore, after maturing, there is a trigger event that creates a crisis (Sellnow & Seeger, 2013). This trigger event, while not formally provided with an explicit stage term in the three-stage model, is similar to the initial event in the CERC model. After the trigger event, the event has reached the crisis stage. Sellnow and Seeger (2013) report that after the crisis begins there may exist "great emotional turmoil, drama and confusion" (p. 32). Next, before reaching the post-crisis stage, there must be some sort of attenuation or resolution. Resolution is specifically mentioned by CERC and Fink's four-stage model, but is only implied in the three-stage model. However, resolution must be part of the three-stage model because there cannot be a "post-crisis" if there is not some sort of resolution. Therefore, because the three-stage model is actually more complex than first seems (when considering the implied

sub-stages and/or stage divisions or events that cause a transition in stages), and is used often by researchers, it will be applied in this paper. To summarize, the fully expounded three-stage model actually involves five components: pre-crisis, trigger event, crisis, resolution, and post-crisis.

Understanding these stages and how citizens change mentally during a disaster will help improve future communication efforts. Communication should not remain static. Reynolds and Seeger (2005) call for a holistic view of communication that covers all stages of disaster events: before, during, and after. Furthermore, there is an increasing overlay between risk and crisis communication literature (Steelman & McCaffrey, 2012). An increased understanding of how the public perceives disasters over the lifecycle of an event will help researchers and practitioners create better messages that are tailored to a specific mental state. These messages can help increase a sense of peace and reduce confusion after crisis situations (Lachlan & Spence, 2007) and potentially during crisis situations. Next, both static and fluid psychological states will be explored in context of disasters.

Psychological Factors

During a disaster, researchers need to understand what exactly “contributes to sensemaking that leads to effective decision-making” (Mills & Weatherbee, 2006, p. 277). Understanding what factors remain constant and what factors change throughout a disaster will help those responsible for communication, to perform their job more adequately. Two factors that appear to remain static during disaster events are a tendency to judge information and information senders concerning trustworthiness (Rod, Botan, &

Holan, 2012), and the tendency to make sense of situations based on the reactions of other individuals in similar circumstances (Caldini & Trost, 1998).

Static Factors

Untrusted messages are seldom followed. When individuals have been provided with false information, they may not trust the source of that information in the future. Trust is significant when choosing what reaction to take to messages from those in authority (Rod, Botan, & Holan, 2012). Trust may be built before an event and then message senders have the opportunity to draw on this trust when it matters most.

Without trust in public officials, the public may choose to wait and follow the cues of others in the social environment. Reynolds and Seeger (2005) claim that credibility is critically necessary when communicating risk and crisis information. Because people often tend to seek confirmation of the adequacy or appropriateness of personal beliefs and actions, social cues are also relevant to consider in uncertain situations.

Warning responses have been tied to cues in the social environment (Sorensen, 2000). Furthermore, researchers suggest that “risk is manifested socially, [and] it may prove more useful for governmental agencies to meet people’s needs at both rational and emotional levels, rather than merely conveying facts about risk (Rod et al., 2012, p. 96). Furthermore, social norms often “exert the greatest influence when conditions are uncertain” (Caldini & Trost, 1998, p. 162). This may be why some researchers promote the repeated use of messages that are produced informally by individuals in the community (Sorensen & Mileti, 1988).

Fung and Scheufele (2014) suggest that social comparisons influence perception and behavior. In flooding situations, those involved often have perceptions of disbelief (Drabek, 1969). Feelings of uncertainty can create intentions to seek information from others in order to confirm what is happening (Spence et al, 2006). Crisis communicators should understand that messages will often be discussed before individuals make a final decision on what to do with available information. This is part of a complex social process that is prompted by potentially dangerous circumstances announced in warning messages (Mileti & Beck, 1975).

Next fluid psychological factors will be discussed. Mental stages that tend to change or be more prevalent during particular disaster stages will be explicated. Furthermore, communication strategies that may be most pertinent to those stages will also be provided. Messages tailored to particular mental states have a better chance of connecting with citizens because of mental state and message congruence.

Fluid Factors

Pre-Crisis

Some psychological factors that influence citizens in a disaster are less static and are more particular to certain stages. And, it is important to understand that citizens will probably not respond in situations where no threat is perceived (Sorensen & Mileti, 1988). In terms of threat level, “an appropriate level of negative affect must be achieved – enough to motivate those affected to act, but not so much as to engender hopelessness or antisocial behavior” (Lachlan, Spence, Lin, & Del Greco, 2014, p. 513). The first function of a pre-crisis message is to assert that a real hazard exists (Lachlan & Spence, 2007; 2009). In fact, most “messages are issued in the pre-event phase of a natural

disaster, although postevent recommendations are sometimes made to help people avoid further harm” (Perreault, Houston, & Wilkins, 2014, p. 486). After a threat is perceived, the public will be more ready to take specific actions that will help avert harm. Without perceptions of hazard, action is unlikely because potential consequences are seen as non-existent or inconsequential. Even if a real threat exists, the public may not understand why the risk is consequential unless explicitly stated.

Perceived susceptibility is an “individuals’ beliefs about their risk of experiencing the threat” (Witte, 1994, p. 114). Perceptions of susceptibility will vary among the public. And these “evaluations of the nature of a hazard could have a direct impact on people’s judgment of information sufficiency about the risk” (Griffin, Dunwoody, & Yang, 2012, p. 344). Perceptions of threat can lead to a variety of actions including taking action, seeking additional information such as threat confirmation, or waiting to see how the situation develops. And, these choices will often be made with reference to what other individuals in the social atmosphere are choosing to do.

When a risk is made known, individuals may react in different ways. Some individuals are optimistic and unrealistically confident (Sjöberg, 2000; Covello & Sandman, 2001). Sorensen and Sorenson (2007) warn that evacuation responses are often not predictable on the basis of prior close calls (potentially because of how disasters vary in levels of intensity and risk). Dillon, Tinsley, and Burns (2014) suggest that experienced individuals can either have a mentality that will lead to more preparation or a false understanding of personal invincibility. The difference is that “[vulnerable] near misses will activate feelings of risk and protective action intentions, whereas resiliency near-misses have the opposite effect;” however, “prior experience with a hazard is not a

good predictor of future protective action because not all near-miss events are alike” (Dillon et al, 2014, p. 1920). And, Rod et al. (2012) report: “the emotions related to the past disaster may reinforce protective behaviour that may have been implicitly and tacitly passed over generations, such as building new homes higher above sea level in the aftermath of the previous disaster” (p. 96).

In some cultures, when faced with decisions on how to prepare for a threat, community members may face “substantial social pressure to abide by rules and norms embedded in community structure, which tend to stifle open expression of dissent” (Allen, 2006, p. 84). And, “household in America are most likely to take steps to prepare themselves if they observe the preparations taken by others” (Wood et al., 2012, p. 611).

Rod et al. (2012) suggest that in order to get people to evacuate, those giving risk information must be trusted along with the information they are providing. However, those involved in a disaster situation may be uncertain about what is happening and what to do about it. Individuals may take time to ruminate and “reflect on the devastation that has been caused by previous natural disasters, hoping they do not incur the same fate” (Kemp, Kennett-Hensel, & Williams, 2014, p. 935). And, individuals may take time to make logical sense of what is happening (Weick, 1993). After such deliberation, individuals may make a decision or decide to see how the disaster unfolds before taking action. Researchers suggest that many citizens will evaluate risks and use that evaluation to make a decision” (Sorensen & Mileti, 1988, p. 207). Therefore, crisis communication efforts should have different strategies for each stage of a crisis. Therefore, several communication strategies for the pre-crisis stage are not offered.

Pre-Crisis Communication Strategies

Several things can be done in order to communicate more effectively during various stages of a crises, disasters and similarly catastrophic events. However, prior to any disaster, local governments should have crisis communication plans for all potentially negative events that typically occur in the area. Strategic crisis planning includes forming partnerships and having pre-event logistics (Seeger, 2006). Also, disaster communicators should have contact information for experts and agencies that are familiar with unusual risks.

In accordance with the previously mentioned literature, pre-crisis messages should include information about: warnings, evacuation, credible information sources, proper preparation, and supply locations. Furthermore, during the pre-crisis stage is a good time to set up a monitoring system for legacy media and social media. A monitoring system will allow for better messaging in accordance with current needs of citizens (Spence, Lachlan, Lin, & del Greco, 2015).

The effective monitoring of public messages is a significant first step in enabling emergency personnel to know which cognitions are currently present. Consistent monitoring of the cognitions of the public through all stages of a disaster, in parallel with information provided from official messages about the disaster event, can help lead to improved communication. Researchers have archived tweets in real time during natural disasters (Spence et al., 2015) for later analysis. Researchers have also proven the viability of monitoring social media accounts in real time to discover the nature of a disaster including information such as the magnitude of the event and the amount of people involved. Spence et al. (2015) found expressions indicating psychological change

during Hurricane Sandy such as fear, dread, and sorrow. However, in order to monitor a disaster effectively in real-time, Teodorescu (2015) suggests scanning should be renewed every minute, and that data should be “cleaned from noise and processed to produce timely and relevant information” (p. 332). Therefore, the government needs to develop a system that will be able to sift through, potentially, millions of social media posts and find the ones that accurately and currently represent the population being affected. Next, potential psychological states in the crisis stage will be explored.

Crisis

Overall, some researchers suggest that the public will appropriately adapt to the changing circumstances of a crisis (Tierney, Bevc, & Kuligowski, 2006). However, along with incoming wind, rain, sleet, or chemicals, there may arise confusion and bewilderment. Rising tides and cyclone winds may produce a flurry of emotions. When a disaster strikes, those in a community may begin sensing “stress and fear regarding the future...and [have] emotional instability” (Nelson et al., 2009, p. 177).

Individuals may feel a variety of emotions during a disaster. During Hurricane Sandy, social media posts included content that portrayed fear, anxiety, sorry, or dread (Spence, Lachlan, Lin & Del Greco, 2015). The associated uncertainty during a disaster can increase information seeking all the way until the post-crisis stage (Nelson et al., 2009). This uncertainty can lead to information seeking (Lowrey, 2004) from sources such as media, family, friends, or authorities. Even if not in the direct crosshairs of disaster, there may be an increase of anxious individuals who fear the potential of a severe health threat (Reynolds & Seeger, 2005).

As previously mentioned, social comparisons are always being utilized by those directly affected by a storm or other threat. Furthermore, those directly affected will continue to monitor information and information sources to see if they are trustworthy and will evaluate messages accordingly. Multiple strategies are available for communicating more effectively during the crisis stage.

Crisis Communication Strategies

Crisis-stage messages should include information about: best current safety options, how to prevent further loss, potential escape routes, and how to notify others about help needed. Significant information on social media should be updated and reposted continually in order to be found in a “sea of nonsense” (Spence et al., 2015, p. 183).

Additionally, the government needs to partner with the public. Important disaster intelligence can be drafted from those with mobile devices capable of capturing current data. Response planning should “take into account the inevitability and pervasiveness of emergent [citizen response] groups and behaviors” (Stallings & Quarantelli, 1985, p. 99). Researchers suggest that integrated networks of “residents, local media, and community organizations might be said to have more ‘carrying capacities’ – capacity to deal with multiple stories over time and capacity to detect new stories as they emerge in a dynamic environment” (Kim & Ball-Rokeach, 2006, p. 183).

Close connections to legacy media are also imperative. The news media can create discussions that increase engagement (Chen, Dong, Ball-Rokeach, Parks, & Huang, 2012). Media attention may also increase volunteer numbers (Nah, 2009). And, the media can repeat vital messages. Research shows that using multiple messages

increases the likelihood that they will be followed (Mileti & Beck, 1975). After a disaster is over, individuals may experience a variety of other cognitive states.

Post-Crisis

After a disastrous event, cognitive levels of fear, ease, or positivity may depend on a variety of factors. Some emotions are common while others are not as common as most would assume. Some researchers report that “victims respond and adapt well during and following disasters” even though the mass media and public officials may suggest otherwise (Tierney et al., 2006, p. 58).

Not all victims recover at the same rate. Maternal confidence rebound will differ depending on the individual mother (Goto et al., 2014). Consequences such as post-traumatic stress disorder can last for years or decades depending on personal circumstances (see Bromet, Havenarr, & Guey, 2011). If a particular organization or agency is at fault, citizens may wonder “what went wrong, why, and what is being done in response” (Reynolds & Seeger, 2005, p. 46).

After terrorist attacks, individuals may experience a range of attitudes including anger, sadness, anxiety, and concern for others; but also, love and gratitude (Fredrickson, Tugade, Waugh, & Larkin, 2003). At times, resilient citizens may recover with more positive attributes than previously held. For example, after terrorist attacks, experiencing “positive emotions were critical active ingredients that helped resilient people to thrive despite...emotional blows” and even increased satisfaction in some individuals (Fredrickson et al., 2003, p. 373). These differences in cognitive perceptions may exist for a variety of reasons including individual personality differences, preparedness levels, depth of impact, and proximity to the most severe areas of impact.

Several factors can lead to public outrage after an event. Outrage is a combination of perceptions of dread, responsiveness, and control (Sandman, 2003). If responses are judged by the public as lacking in quality, outrage may be increased (Spence, Lachlan, & Griffin, 2007). Sometimes, being reminded of the disaster can lead to pessimism (Västfjäll et al., 2008) or an increased motivation to learn more (Boyle et al., 2004). In order to boost the spirit of citizens at large, communication efforts may need to focus on rebuilding and renewal (see Veil, Sellnow, & Heald, 2011). Although reactions to the crisis may vary, several communication strategies exist to help crisis communicators deal more effectively with those affected.

Post-Crisis Strategies

Post-crisis communication should include: where to find needed resources, instructions for avoiding similar crises, how to get emotional and financial help, and potential positive outcomes of the disaster. Understanding integrated communication networks of residents, media, and community organizations (Kim & Ball-Rokeach, 2006) will enable helpful resources to flow from community organizations to those in need.

Furthermore, crisis messages need not be completely about destruction and chaos. Messages can carry hope. Messages might want to focus on positive messages about the future that “characterizes the crisis as a starting point, rather than an ending point, and...[embolden] a community to endure in the wake of hardship (Veil et al., 2011, p. 180). These messages may hold the possibility of counteracting outrage.

For all crisis stages, messages should contain highly credible information and be delivered by trusted individuals. Messages are often subject to skepticism and a social vetting process. Furthermore, crisis messages should be adapted adequately according to

the stage that the disaster is currently in. By understanding the public better, those communicating important safety messages can compose stage-specific alerts and updates that are more effective.

This diverse research on disaster stages suggests that individuals and communities do not experience a stagnant psychological state throughout a disaster lifecycle. Because disasters are fluid rather than static, and because exemplars are considered motivational to protective action and information seeking (Zillmann, 2006), researchers need to explore potential differences in exemplification effects depending on disaster stages.

Exemplification and Disaster Stages Research Questions

As previously described, exemplification theory of media effects suggests that media exemplars, such as images, exert more perceptual influence when they are iconic, concrete, and emotional (Zillmann, 1999, 2002). Furthermore, the reviewed literature suggests that exemplars have implications for public safety because they may motivate protective action or information seeking (Zillmann, 2006). Vivid exemplars peak attention, and therefore may stimulate action. Again, scholars report that social media use is increasing (e.g., Vanden Abeele, 2015) along with the ease of sharing exemplars such as images. As noted before, pictorial exemplars have been shown to increase perceptions of danger (Zillmann, Gibson, & Sargent, 1999) increase perceptions of risk (Gibson & Zillmann, 2000) and influence behavioral intentions (Westerman et al., 2015). Because exemplification theory is grounded in cognitive psychology (Zillmann, 2006) and crises go through a variety of stages (Sellnow & Seeger, 2013) that may produce diverse mental states in the public (e.g., Sellnow, Seeger, & Ulmer, 2002; Spence, Lachlan, Lin & Del Greco, 2015; Fredrickson, Tugade, Waugh, & Larkin, 2003), it is necessary to discover if

exemplars in social media exert differing perceptual influence and intentions to seek information in various stages of extreme weather events. Understanding these differences may help public officials better utilize images to motivate the public to take protective action and potentially reduce disaster impact. The aforementioned literature leads to these research questions:

RQ1: Will a photographic exemplar of disaster damage exert different perceptions of severity depending on which stage the exemplified disaster is in?

RQ2: Will a photographic exemplar of disaster damage produce differing intentions to seek further information depending on which stage the exemplified disaster is in?

Another challenge to effectively communicating during disasters, along with the complexity of disaster stages, is understanding the changing nature of the communication infrastructure in light of new internet technologies combined with mobile computing power. Next, the digital communication ecology will be discussed. And, concepts of the public sphere and social capital will be explained in light of information as capital. Then, networked communities and communication infrastructure will be explored. Also, citizen journalism, emergent citizen groups, and disaster implications will be connected. After that, several research questions are posed in light of the reviewed literature.

Digital Communication Ecology

Crises and disasters are situations where efficient and effective communication can save lives and reduce damage. And as previously mentioned, risks are often “manifested socially” (Rod, Botan, & Holen, 2012, p. 96). Furthermore, these situations create a need for “rapid, up-to-date information” (Sutton, League, Sellnow, & Sellnow,

2015, p. 135). Personal communication devices, such as cellphones, laptops, and tablets are largely ubiquitous in many modern societies. Instead of just consuming news and entertainment, citizens can also create and share content to a mass audience.

The internet allows efficient sharing of risk information, easy access to information, quick access to a wide audience, interactivity, an open participation space which may increase involvement, and the potential amplification of risk information from the local to the national level (Chung, 2011). Sharing information in a disaster or emergency has the potential to help reduce negative effects. This section will first review theoretical perspectives related to communities and new technologies in the context of disasters, crises, and related calamitous situations. Conceptualization of the public sphere will be explored to show how networked communities enhance the ability of citizens to connect and share information. And, social capital is explicated to illustrate and conceptualize shared resources in a networked community. Communication infrastructure theory shows the various levels of communication systems and participants that have potential to share social capital. And, a brief review of citizen journalism shows the mechanism that enables emergent citizen groups. Finally, theoretically grounded and practical disaster applications of networked civic communication will be reviewed.

Digital Theoretical Perspectives

The Public Sphere

The concept of the public sphere is “closely tied to democratic ideals that call for citizen participation in public affairs” (Papacharissi, 2002, p. 10). By combining the concepts of the public sphere, social capital theory, and communication infrastructure theory, in the context of increasingly networked communities, researchers and disaster

communicators can reach a better understanding of how to effectively communicate to, and with, citizens during crises. For example, the public sphere can potentially be enlarged or enhanced by network technologies. Furthermore, the increased networking of individuals and communities (from networked communities and stronger communication infrastructures) allows for increased, and better coordinated, sharing of information and resources (social capital).

New technologies offer new connections that may increase civic participation. However, not all technologies have enhanced civic life. Television has been blamed for a great reduction in civic participation (Putnam, 1995). However, the internet is more interactive. Papacharissi (2002) suggests that the internet: provides greater access without guaranteed participation or enlightenment, contains discourses that are often dominated by a handful of participants, may create a false sense of empowerment, allows diversity to become fragmented, and is impacted more by advertising revenue than democratic ideals. Nevertheless, the internet also serves as a space for additional expression and holds the potential to turn into a public sphere.

Internet access “does not guarantee increased political activity or enlightened political discourse” (Papacharissi, 2002, p. 13). Entertainment media allow users to go into isolation. However, internet connected social media also enable “users the opportunity to publish...and to engage” (Houston et al., 2015, p. 4) in crises. Furthermore, Lin (1999) suggests that “cyber-networks represent a new era of democratic and entrepreneur networks and relations where resources flow and are shared by a large number of participants with new rules and practices” (p. 45). This flow of resources is explained well by social capital theory.

Social Capital

Social capital is the concept that communities have a network of individuals who possess resources to draw upon. Popularized by Putnam (Nah, 2010), social capital theory involves the pooling of resources that enable action and goal accomplishment (Shah, McLeod, & Yoon, 2001). Resource pooling, to complete desired goals, is enabled through social interaction (Coleman, 1993). Social networks enable the development of trust and the sharing of resources (Prell, 2003). Putnam (1993) reports social capital as “features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions” (p. 167). Bourdieu (1986) suggests that social capital is the “aggregate of the actual or potential resources which are linked to...relationships” (p. 88). Again, the conduit of these resources is human relationships (Shen & Cage, 2013).

Multiple types of social capital exist. Maintaining social capital is the ability to uphold connections with individuals in a community one has previously departed from (Ellison, Steinfield, & Lampe, 2007). However, the main forms of capital are bridging and bonding social capital. Shen and Cage (2013) report that bonding capital is composed of consistent, close, repetitive connections, often between relatives and closer friends. Whereas, bridging capital is a more diverse but less substantial, and emotionally minimal, connection between more distant groups. Bridging capital has the ability to provide opportunities that may not arise in a smaller environment. And, networked communication provides an increased opportunity for bridging capital to form.

Nah (2010) reports that social capital involves networks, norms, and trust. Trust is shown in “word and deed” (Palenchar & Heath, 2007, p. 125). A lack of trust will hamper

community and personal safety (Perreault, Houston, & Wilkins, 2014). Furthermore, community protection will be harder when communication is not trusted (Perreault et al., 2014).

Preparing for a disastrous event should include assessment of social resources (Reininger et al., 2013). And, during a crisis, community members may draw on stockpiled social capital (Fowler & Etchegary, 2008) to reduce harm. For example, during medical crises, social capital can reduce job tensions and emotional fatigue (Chang, Gotcher, & Chan, 2006). Social capital can also increase the implementation and discovery of beneficial resolutions after a crisis (Helliwell, Huang, & Wang, 2014). According to Putnam (1993), “Spontaneous cooperation is facilitated by social capital” (p. 167). After a disaster, some citizens may feel a sense of sympathy (Fredrickson, Tugade, Waugh, & Larkin, 2003). This sympathy may lead to beneficent action.

Social capital is accessible through the internet. Lin (1999) claims that, “Access to free sources of information, data, and other individuals create social capital at unprecedented pace and ever-extending networks” (p. 46). The internet has enabled greater citizen participation in risk management. The internet has increased the potential for higher citizen awareness, information access, and information sharing concerning risk (Chung, 2011). Furthermore, citizens have a “growing demand for a sense of agency or control over their exposure” (McComas, 2010, p. 462). This sense of agency may be enhanced through social capital stemming from networked communities.

Networked Communities and Social Capital

Cybernetworks are “social networks in cyberspace” (Lin, 1999, p. 43). Social capital may be created or enabled through media attention (Nah, 2010). Lin (1999) claims

that “we are witnessing *a revolutionary rise of social capital*, as represented by cyber-networks” (p. 43). The internet, although not a panacea, can be utilized to form and maintain a sense of community during emergencies (Procopio & Procopio, 2007). And, a community information commons may enhance or allow the increase of social capital (Nah, 2010). Virtual communities can create the opportunity for weak ties to develop and for geographically relevant connections to form during a crisis (Procopio & Procopio, 2007). More distant ties can also be maintained through the internet by the use of social media. Bridging, maintaining, and bonding social capital have all been correlated with Facebook use (Ellison et al., 2007).

Papacharissi (2002) suggests that the virtual space will become a virtual public sphere if it “enhances democracy” (p. 11). Online communication is becoming increasingly common. Many people “participate daily in a plethora of non-commercial online fora” (Dahlberg, 2001, para. 7). Furthermore, when a crisis arises, so does social media use (Lachlan, Spence, Edwards, Reno, & Edwards, 2014; Lachlan, Spence, Lin, Najarian, & Del Greco, 2014; Lachlan, Spence, Lin, & Del Greco, 2014). Those in need of helpful health information often turn to the internet for help (Bernhardt & Felter, 2004). Furthermore, research suggests that the “promotion of public safety and health, in order to be effective, might have to concentrate on this medium [the internet] of information conveyance” (Zillmann, 2006, p. S233). Next, communication infrastructure theory will be used to explore different potential storytelling agents in a networked community during a disaster.

Communication Infrastructure Theory

Communication infrastructure theory (CIT) “focuses on various communication opportunity structures...that make it either easy or difficult for residents of a local community to build community” (Kim & Ball-Rokeach, 2006, p. 175). CIT is “a comprehensive model for understanding the communicative dynamics underpinning civic engagement in a residential area” (Chen, Dong, Ball-Rokeach, Parks, & Huang, 2012, p. 934). Communities have a variety of storytellers. CIT explicates the various storytellers, such as residents, community organizations, and geoethnic local media that build community and facilitate civic participation and collective action (Kim & Ball-Rokeach, 2006). Chen et al. (2012) provide examples of a variety of levels of community storytellers. Macro-level agents can include the legacy media and broad government structures. Meso-level agents are more geographically concentrated community organizations and media outlets. Finally, micro-level agents, who create ties and share resources, are community residents who communicate what is happening that directly impacts their personal lives.

These various levels of storytellers may mix and combine. The “new media provide a source of information that enables individuals to have discussions about public issues, and these conversations in turn stimulate engagement” (Chen et al., 2012, p. 933). Having a wider pool of participants in media creation and dissemination presents opportunities for risk and crisis communication.

CIT is important to understand because communication “resources become the key to mobilizing groups” (Tambini, 1999, p. 317). Increased citizen mobilization is potentially helpful in disaster situations. According to CIT, “the extent of civic

engagement in a neighborhood depends on not only the individual capacities of meso – and micro – level agents to tell local stories but also how tightly connected these agents are to one another” (Chen et al., 2012, p. 934). Social media platforms allow those who are potentially more tightly connected to share vital information with those around them that may need it. This is pertinent because residents in a common geographic area often share similar apprehensions and “have a common desire for more local news and information” (Chen et al., 2012, p. 945). Next, to better understand integrated community communication during a disaster, the increase in internet-enabled mobile communication and citizen journalism will be discussed.

Mobile Media, User-Generated Content, and Power

Distribution of communication power is an important concept to understand. New communication networks “have reshaped communicative directions and flows...[and] increased flows of communication from below (Friedland, Hove, & Rojas, 2006, p. 9). However, to better understand how the communicative power structure is changing, a review of social media use, mobile technology use, and citizen journalism is provided.

Mobile access to the internet is increasing (Miller, 2014). Abeele (2015) suggests that the recent decade has “witnessed the rapid and widespread adoption of mobile communication technologies” (p. 1). According to the Pew Research Center, 77% of Americans own a smartphone (Smith, 2017). Other countries have even higher rates of adoption. Furthermore, a “mobile youth culture” (Abeele, 2015, p. 3) has developed. For example, the number of 18-29-year-olds that own a smartphone in America has reached 92% (Smith, 2017). And, researchers have found that in young people, trust and civic

participation are influenced more by using the internet to find information than traditional broadcast and print media (Shah et al., 2001).

In social discourse, power may be applied by framing organizational messages as if they were to benefit others (Palenchar & Heath, 2007). Dahlberg (2001) claims that online communication is often dominated by certain groups or individuals and can be tainted by corporate interests. However, internet access and utilization may increase power for those who may not typically have a strong voice. The internet allows those “marginalized and decentralized from mainstream news media to build a stronger civil society” (Nah, 2009, p. 5).

Previously, sending messages to a wide audience was the privilege of a few corporations. Most news came from corporate news agencies or from government officials (Palenchar & Heath, 2007). However, nearly anyone can upload and share stories and news with new technologies. Recent technological advances in communication devices allow greater user-friendliness, direct access to information, more choice over content, and fewer gatekeepers (Tambini, 1999). This makes it possible for anyone to communicate essential risk and disaster information. For example, social movements are beginning to move online to utilize constant connectivity and wide information access (Friedland et al., 2006).

The public does not passively follow crisis instruction (Sorenson, 2000). Information is often biased (Tambini, 1999). A credible threat must be established before listeners will respond to risk messages (Perreault, Houston, & Wilkins, 2014). Furthermore, in order for evacuation information to be followed in a natural disaster, citizens must trust both the information and the experts who deliver the information (Rod,

Botan, & Holen, 2012). Reducing mistrust should be a primary goal of those responsible for communicating risk (Aldoory, 2009). McComas (2010) suggests that trust can be built by sharing the control of risk management. Trust, essential in crises, “is groomed and maintained, and can be lost or destroyed” (Palenchar & Heath, 2007, p. 125). Furthermore, Putnam (1993) reports, “Trust lubricates cooperation. The greater the level of trust within a community, the greater the likelihood of cooperation” (p. 171).

Organizations can “utilize risk communication to empower relevant publics by helping them to develop and use emergency responses that can mitigate the severe outcomes in the event” of a crisis (Palenchar & Heath, 2007, p. 127). Because official disasters are sometimes met with skepticism, local citizens should be encouraged to join crisis communication efforts as citizen journalists.

Citizen Journalism

The news media are increasingly using content that is not created by professional organizations. Mainstream newspapers cannot cover every story pertinent to a location or community group. Grassroots media systems are sometimes able to fill important information gaps (Chen et al., 2012). Structurally, the “adoption of citizen journalism can be viewed as a feedback control mechanism by which newspaper organizations respond to and incorporate the needs and interests of the communities they serve” (Nah, Yamamoto, Chung, & Zuercher, 2015, p. 7). McComas (2010) reports that during a crisis, people often want to help or be involved. And, “grassroots web-based initiatives can potentially fill the local coverage vacuum left behind by the legacy media...[and] the affordances of the internet allow...a forum for ongoing discussion of local affairs” (Chen et al., 2012, p. 932).

There are no longer restrictive gatekeepers that shield or restrict the public from accessing a large variety of information and sources (Tambini, 1999; Veil & Ojeda, 2010). Citizens now have a choice of nearly infinite resources to consume (McComas, 2010). And, user-friendly, interactive, and malleable computer mediated communication has made communication tools accessible to a large number of the public (Tambini, 1999). For example, social networking sites allow relationship building and maintenance built on a foundation of commonly shared interests (Ellison et al., 2007). A community disaster would quickly comprise a shared interest in community safety.

New communication technology allows broader participation in storytelling during a crisis or disaster. Individuals who assess risks are often essential because they can share what they know (McComas, 2010). The qualities of the best storytelling systems include being: “broad (from world to neighborhood referents), deep (many stories about all referents), and integrated (strong linkages between macro, meso, and micro storytelling production systems)” (Ball-Rokeach, Kim, & Matei, 2001, p. 398). Furthermore, in order to solidify local storytelling, communication interventions should grow from pre-existing connections (Chen et al., 2012).

The opportunities held in the online communication environment have created a very open action context. Communication action context pertains to factors that either prevent or facilitate communication. An “open context is one that encourages people to engage each other in communication, whereas a closed context discourages such encounters” (Matei & Ball-Rokeach, 2003, p. 645). Factors influencing action context include both sociocultural characteristics and the physical makeup of the communication system. Because of the increase in mobile phone use, and the ease of sharing provided by

mobile devices, a very open action context has been created for the sharing of risk and crisis communication. Researchers suggest “Twitter (and other social networks) should be seen as valuable tools and part of a larger ‘action net’ that can be instantly created and used during a crisis situation to meet the unique information needs of various stakeholder groups” (Getchell & Sellnow, 2016, p. 599). Necessary factors for communicating well, with respect to the new communication ecology, will be discussed next.

Digital Civic Communication in Disasters

Papacharissi (2002) reports that the “value of the virtual sphere lies in the fact that it encompasses the hope, speculation, and dreams of what could be” (p. 23). Technology, in the context of crises, disasters, and other emergency situations is extremely valuable because it allows “even more exacting location-specific information to be collected ‘in the field’ and shared with others” (Palen, Hiltz, & Liu, 2007, p. 57). And, citizen based communication has the potential to “provide important tactical, community-building and emotional functions” (Palen & Liu, 2007, p. 728).

McComas (2010) reports, “People’s concern about risk, coupled with their need to ‘do something,’ has underscored the need to find appropriate and meaningful ways to engage citizens in risk management” (p. 461). Early detection of problems can potentially reduce negative impact (Veil, 2011). Even terse messages, such as those found on Twitter, have the ability to contain instructional content that will be helpful to those at risk (Sutton et al., 2015). And, Palen et al. (2007) report, “The availability of mobile, networked information communication technology (ICT) in the hands of ordinary people makes information exchange increasingly potent” (p. 57).

However, the availability of information on the web 2.0, and a public willing to share information, does not mean that information coordination is easy. Palen & Liu (2007) report several challenges that face more effective use of information communication technology. First, the current National Incident Management System is somewhat military based and therefore does not have a highly autonomous system of coordination. And, this same system was based on fighting fires, rather than a broad approach that might be effective in a variety of disasters. Furthermore, communication keeps evolving.

Palen & Liu (2007) offer several strategies to improve the coordination of citizen and official disaster response. First, officials who communicate to the public in a disaster should continue to monitor for correct and incorrect information. Second, officials should be willing to direct the public to citizen-led websites that are legitimate sources of information and resources. Furthermore, information coordination should adapt appropriately according to both the stage of the disaster and the distance from the disaster (different regions and stages call for different needs). And finally, communication efforts “need to marry physical and digital information hubs so that information can co-exist with the benefits of each” (Palen & Liu, 2007, p. 735).

Officials should coordinate carefully with local organizations and emergent citizen groups. Community organizations can “tell stories that speak to residents’ need to come together to address shared problems and opportunities” (Kim & Ball-Rokeach, 2006, p. 178). Emergent citizen groups are those “that emerge around perceived needs or problems associated with both natural and technological disaster situations” (Stallings & Quarantelli, 1985, p. 34). Stallings and Quarantelli (1985) report that these groups lack

tradition, formalization, and institutionalization. And, they create new tasks, goals, and relationships. Furthermore, the groups often form according to three emergency phases: the damage assessment groups, operations groups, and coordinating groups. Finally, group functions include: warning, training, preparation, planning, mitigation, prevention, and alerting.

When a disaster strikes a community, a group of citizens and/or community organizations may emerge online to meet the needs of those in the surrounding area. Offline emergent citizen groups have been studied before internet access became mainstream and easily accessible. For example, when a 1970 California wildfire overwhelmed government capacities to react, a volunteer group formed to help register and support activities for those fighting the fire. The group was actively “developing its own independent leadership and making its own decisions; hence, it is viewed not as an extension of civil defense operations but rather as an autonomous operating group” (Stallings & Quarantelli, 1985, p. 93). Volunteers helped coordinate phone calls, medical supplies, shelter, food, and other supplies for firefighters and victims.

However, these groups are now forming online as well. Internet forums “can extend the opportunity for grassroots social action to anyone who wants to get involved; physical space community members might turn to them as virtual gathering spaces to communicate with fellow citizens when disaster conditions make this [physically meeting] difficult” (Palen, Hiltz, & Liu, 2007, p. 55).

Palen et al. (2007) reports several examples of online forums and grassroots participation in emergency responses regarding natural disasters. For example, even before Hurricane Katrina hit the southern coast of the U.S., online citizen-led sites were

forming. Through different stages of the storm, these online forums assimilated information about locating missing people, finding shelter, and storm damage. Also, during the 2003 California wildfires, a resident who did not evacuate reported information about unburnt buildings. This information was then assimilated into a well-trafficked website.

According to the tenets of ICT, communication efforts should effectively integrate efforts between communication levels. A quality storytelling network has a high level of integration between residents, community organizations, and the local media (Kim & Ball-Rokeach, 2006). For example, there are instances where public officials are working with citizen-led websites to coordinate rumor control (Palen et al., 2007). And, local nonprofits “may serve as important and valuable news sources for local news media because voluntary associations provide a wide variety of services to local communities and interact with other community institutions and organizations” (Nah, 2009, p. 6). Nah (2009) suggests that nonprofit organizations lacking in resources and influence may benefit from the internet’s ability to connect the organization with government resources, build publicity through hyperlinks, and reach community volunteers directly.

Online communication networks present practical opportunities and challenges (Lin, 1999). Multiple factors may reduce participation, trust, or the effectiveness of the online public sphere. Several of these factors include: state and corporate interests, the difficulty in verifying information and identities, domination by certain participants, and exclusion by those unable or restricted in ability to participate (Dahlberg, 2001). However, these potential setbacks should not keep disaster communicators from continuing to utilize online citizen communication during crises. Emergent groups often

attempt to “mobilize resources and establish new social linkages” by holding meetings, publishing newsletters, and creating access to people and information (Stallings & Quarantelli, 1985, p. 96). Therefore, online emergent groups should be embraced in crises, disasters and similar events because they “create a means for sharing and learning from personal stories, experience, and knowledge in preparation for future events (Palen et al., 2007, p. 57). In the context of CIT, social capital theory, networked communities, and the public sphere, the importance of integrated online communication in alleviating and preventing community damage during disasters should not be underestimated.

Research shows that trust is crucial when trying to get people to take protective action such as an evacuation (Rod, Botan, & Holen, 2012). However, more research needs to be undertaken to explore the influence of a variety of message senders over newer communication technologies. For example, comparing messages that include exemplars from experts, news journalists, citizen journalists, neighbors, and authorities, over a variety of communication modes, is an important direction for future research. Perceptions of source credibility in social media posts, in a risk context, has been compared between strangers, peers, and experts (Lin, Spence, & Lachlan (2016). However, research is lacking regarding perceptions of emergent citizen organizations. Based on the previous literature review, several questions are proposed.

Research Questions

As previously mentioned, Zillmann (2006) suggests that exemplars are significant for public safety because they may promote information seeking and self-protective action. And, the aforementioned literature reports that during a crisis, citizens need accurate information delivered quickly (Sutton, League, Sellnow & Sellnow, 2015). The

legacy media has historically been the primary source of exemplars (Zillmann, 1999). However, researchers suggest that the public often distrust risk information provided by media spokespersons, government officials, or industry officials (Palenchar & Health, 2007). As formerly discussed, trust is an important part of social capital. Trust increases community cooperation (Putnam, 1993). And, without trust in those communicating, or trust in the information being provided, individuals may not take protective action (Rod, Botan, & Holan, 2012).

However, as reported in the literature review, the changing media ecology allows a wider variety of participants to share messages during a disaster situation. New communication networks allow an increase in sharing of user-generated, citizen based, content (Friedland, Hove, & Rojas, 2006; Houston et al., 2015) and interactivity (Lin, Spence, Sellnow, & Lachlan, 2016). And, the internet makes it easier to reach potential volunteers (Nah, 2009). Furthermore, and previously stated, social media has been shown capable of providing helpful disaster information (Sutton et al., 2015). Also, emergent citizen groups form online and share information during disasters (Palen, Hiltz, & Liu, 2007). Additionally, residents want local news and information (Chen et al., 2012). However, trust in citizen generated exemplars, and the extent to which they influence information seeking have not been compared to other sources of disaster information.

RQ3: Are emergent citizen groups in social media trusted as much as government organizations?

RQ4: Do emergent citizen groups and government generated exemplars differ in exemplification effects and do they differ depending on the stage of the disaster?

Additionally, volunteers often face “pressing doubts and ambiguities about one’s role, identification, relationships, interaction, and even legitimacy and importance as a member” (Ashcraft & Kedrowiz, 2002, p. 91). Therefore, this research seeks to explore willingness to volunteer depending on the organization soliciting volunteer demographic information, time, or money.

RQ5: Does a difference exist in intentions to volunteer time, money, or geographic storm damage depending on organization (emergent citizen group vs. governmental)?

Chapter Summary

This chapter summarized research concerning exemplification research, disasters, and the changing media ecology. Media exemplars in disasters have the potential to peak cognitive awareness when most needed. Furthermore, disasters are not static events but instead go through complex and significant changes throughout their lifecycles. The changing nature of disasters creates parallel cognitions in the public during extreme events. Additionally, the changing media environment and evolving communication technologies create new opportunities to communicate essential information. Next, two studies are offered with the purpose of clarifying relationships between exemplars in evolving technological capabilities and information seeking, intentions to volunteer, disaster stages, and organizational trust.

CHAPTER 3: METHODS

In order to establish a generalizable understanding of the significance of exemplars in social media with regard to disaster stages and media sources, two quantitative experiments were designed. The purpose of quantitative communication research is to compare measured values of phenomena (Keyton, 2011). Experiments are meant to manipulate “one variable – the independent variable – to see how that manipulation affects another variable – the dependent variable” (Allen, Titsworth, & Hunt, 2009, p. 11). In this chapter, first, a brief review of experimental designs is offered. Next is a discussion of two experiments designed to answer the research questions proposed in the previous chapters. Also, recruitment procedures and measures are explicated.

Experimental Design

Researchers turn to experiments when they are “curious about causes” (Keyton, 2011, p. 137) and want to make generalizations about behavior (Allen et al., 2009). Experiments allow for evaluation of hypotheses and research questions to determine if differences exist between multiple circumstances. Experimental research allows for the testing of various questions regarding predicted relationships or differences between variables (Keyton, 2011; Allen et al., 2009).

Full experiments have researcher manipulated independent variables and random assignment of participants. Researchers randomly assign “individuals to one of at least two groups” (Keyton, 2011, p. 137) with the intent to “observe, explain, predict, and perhaps control specific phenomena” (Allen et al., 2009, p. 7). The treatment group receives a stimulus. And the control group either lacks treatment altogether or is given a

base amount of a stimulus. Random assignment attempts to ensure relatively equal differences between participants in the treatment and control groups (Keyton, 2011; Sawilosky, 2007). Furthermore, full experiments are designed so that one component precedes another (Keyton, 2011). Experiments are designed this way to help determine if exposure to a variable causes something else to happen. By assigning treatment groups, and including a chronological study design in a tightly controlled setting, research experiments are considered to hold high scientific standards.

Various research designs, although valuable, may not allow for such high-quality manipulations or tight control over environmental factors. For example, quasi-experiments, or natural experiments, do not allow the researcher to assign treatment groups. Quasi-experiments are possible “because some variation in the independent variables exists naturally” (Keyton, 2011, p. 150). However, this creates questions about the purity of manipulation because groups may vary in multiple unknown features that may affect the dependent variable (Keyton, 2011). Field experiments are conducted in a more realistic and natural environment. However, “researchers also lack the degree of control they have in true experiments” (Keyton, 2011, p. 152). Therefore, undetected confounding variables may be more likely to exist in field experiments than in more controlled experiments. Descriptive research is another potential avenue to explore communication concepts. However, the ability to determine causation is low in descriptive research designs because they do not allow random assignment to treatment groups, establishment of temporal order, or strict control over independent variables (Keyton, 2011). Because full experiments are good at limiting extraneous variables, help establish causality, and results are more generalizable than descriptive research,

experimental design was chosen to be used in this exemplification research. Next, two experiments are offered to both test the research questions and to extend exemplification theory in a new context.

Study One: Exemplification and Disaster Stages

Methods

Study one consisted of a mock disaster situation about a tornado. The purpose of this experiment was to determine if exemplars exert different levels of participant information seeking and perceptions of severity depending on the stage of the exemplified disaster. The stage of the disaster in a social media message was manipulated in the experiment, as was the presence (or not) of an exemplar illustrating tornado storm damage. This study consisted of a three (pre-crisis, crisis, post-crisis) by two (tornado exemplar, no tornado exemplar) post-test only experimental design. The experiment was administered online and included a self-report survey. After consenting to participate, participants were randomly assigned to one of the six previously mentioned conditions. Participants were encouraged to view their assigned Twitter feed and the continue button did not appear until after 30 seconds of viewing the page. The Twitter feed used was an adaptation of the Centers for Disease Control and Prevention's Office of Public Health Preparedness and Response (@CDCemergency) Twitter feed. After viewing the assigned Twitter feed, participants were then taken to the questionnaire regarding perceptions of tornado severity (the exemplified disaster) and intentions to seek more information about tornado safety.

Participants

Participants were recruited as a convenience sample from undergraduate communication courses at a large southern university. Research participation credit was offered in exchange for participation. Participants were made known of informed consent details and then given the opportunity to participate in the study. In order to keep information confidential, data was collected without identifying information. And, a separate survey was used to keep track of participants who were receiving research credit for their participation. Participants were asked demographic questions including options to identify age, race, and sex.

Treatment

The treatment was given in an online environment. Participants were randomly assigned to view one of six mock Twitter feeds. The first group read an actual twitter feed, with a picture exemplar, of potential damage in the pre-crisis stage. The second group read an actual twitter feed, with a picture exemplar, of current damage in the crisis stage. The third group read an actual twitter feed, with an exemplar, of past damage in the post-crisis stage. The fourth group read an actual twitter feed, without a picture exemplar, of potential damage in the pre-crisis stage. The fifth group read an actual twitter feed, without a picture exemplar, of current damage in the crisis stage. The sixth group read an actual twitter feed, without an exemplar, of past damage in the post-crisis stage. The independent variables were the disaster stage that was reported in the social media news feed and the inclusion or exclusion of a tornado damage pictorial exemplar. A tornado disaster was chosen because tornados represent a threat that is relatively geographically common (thus, participants are more likely to be equally familiar with such a risk as

compared to risks such as a tsunami or earthquake that are more geographically concentrated). The three disaster (or crisis) stages were: pre-crisis, crisis, and post-crisis. The three stage model of disasters was used because it is parsimonious and it is the most common way to study disasters (Sellnow & Seeger, 2013).

Materials

The disaster Twitter feeds were designed to mimic a real Twitter page and included references to a fictional tornado and a photographic exemplar of tornado damage. The pre-crisis feeds reported the potential for damage (such as “There is a high risk for tornado activity in the next few days,” “Weather forecasters suggest current weather patterns are similar to those that may lead to high storm activity , and “According to radar activity, storms and high winds may be headed our way”) and referenced the tornado exemplar as damage that occurred in a previous tornado but that illustrated damage that could occur (potential damage) in the next few days because of similar weather conditions. The crisis feeds reported that the tornado was active and currently causing damage as depicted in the pictorial exemplar (such as “There is currently tornado activity” and “Weather forecasters report that current weather patterns show high storm activity”). Tweets also included messages such as “Radar activity shows a tornado and high winds,” “Weather forecasters have spotted a tornado” and, “Radar activity shows a tornado and high winds”). Also, “Here is some current damage from the storm.” The post-crisis feeds reported that the exemplar represented actual damage that resulted from a previous tornado in the last week. Tweets reported messages such as “There was recently an active tornado,” Forecasters last week accurately reported weather patterns that developed into high storm activity,” “Radar confirmed tornado

activity in the previous storm,” and “Look at the damage caused by the Tornado last week.

The photographic exemplar was a photo of half of a golden-colored McDonalds restaurant arch stuck in electrical wires as the result of an actual tornado. The exemplar was realistic and presented an accurate depiction of what can really happen during a tornado. Furthermore, the image was iconic because of the public's general familiarity with McDonalds ubiquitous fast-food restaurants. This is noteworthy because Zillmann (2002) reports that iconic exemplars are more likely to influence perceptions than those that are not iconic. The picture dramatically represented a familiar symbol in an unusual place.

Measures

Intentions to seek information were measured by asking people to respond to questions about information seeking adapted from a prior disaster study about news stories and hurricanes (Lachlan, Westerman, & Spence, 2010). Participants were directed to answer 4 statements about intentions to seek further information. Participants were asked to respond to statements of agreement on a 7-point scale (ranging from “not at all” to “very much”) such as “after seeing this Twitter feed I wanted more information,” “I want to know the specific actions people took and the success of those actions,” “while viewing the information I thought about what I would do in a similar situation,” and “I need more information to be better prepared for a potential emergency.” Similar questions were used by Lachlan et al. (2010) to create a desire for information scale ($\alpha = .70$). Before analysis for the current study, the four information seeking questions were combined into a single item ($\alpha = .77$).

Perceptions of severity were assessed via 2 statements on a 7-point scale of agreement (ranging from “not many at all” to “very many” or “not severe at to” to “very severe”) such as: “How many deaths do you think occur every year from tornadoes?” A similarly worded question was used to measure perceptions of severity about terrorist attacks in previous exemplification research (see Westerman, Spence, & Lachlan, 2012). Another question concerning perception of tornado severity was “How severe is the average tornado?” This question is similar to questions about perceptions of the severity of bed bug bites used in research by Westerman, Spence, and Lin (2015), for example, “How severe is the average bed bug bite?”

Study Two: Exemplification, Disaster Stages and Emergent Groups

Methods

Study two consisted of a mock situation about a hurricane moving towards the Gulf of Mexico threatening a significant portion of the southern United States coastline. The purpose of this experiment was to compare exemplification effects across disaster stages with a second type of disaster, and to explore if differences in exemplification effects, perceptions of trust and intentions to volunteer existed between messages originating from either emergent citizen groups or official government organizations throughout the various disaster stages. For study two, a hurricane represented a more regional threat in comparison to the tornado damage depicted in study one because tornadoes are more geographically common throughout the United States. Intentions to volunteer included willingness to donate time, money, and/or geographic data about current storm conditions or recent damage.

Study two consisted of a three (pre-crisis, crisis, post-crisis) by two (emergent citizen organization, government organization) between-group post-test only experimental design. Similar to Hurricane Katrina, the situation represented a realistic scenario where emergent citizen groups have formed in the past (see Palen et al., 2007 for a discussion of grassroots citizen participation in disasters generally, and hurricane Katrina specifically). Participants were informed about the research opportunity via the college research participant pool email system and were directed to a website for the study. After being provided with informed consent, participants were given the option to participate in the study. After choosing to participate, participants were randomly assigned to one of six experimental conditions. Respondents were asked to take their time when viewing the experimental page. After viewing the page, participants were directed to an online survey related to exemplification effects, perceptions of credibility, likelihood to volunteer time, money, and geographic data related to the disaster, and other demographic questions including specifications of age, race, and sex.

Participants

Participants were recruited as a convenience sample from a large southern university. Research participation credit was offered in exchange for participating in the study. Participants were given informed consent information and provided with the opportunity to complete the study. To keep information confidential, data was collected without identifying information. Also, a separate survey was used to assign credit for research participation.

Treatment

The treatment was given in an online environment. Participants were randomly assigned to one of six mock Twitter feeds. The independent variables were the reported disaster stage and the organizational source of the tweets. The first Twitter feed contained postings from an emergent community organization. The second Twitter feed contained postings from a government Twitter feed. The emergent citizen group was named “Stormwatch Randy” and the government twitter feed was FEMA. The two pages were identical except for the names of the organizations, related graphics, and twitter handles. The conditions also varied in the stage of the disaster (pre-crisis, crisis, post-crisis) that was exemplified. The Twitter feeds were made to be realistic representations of actual Twitter pages. The exemplars in the Twitter feeds included exemplars of large waves, cyclone clouds, and dark skies. Information in the tweets included information such as “Hurricane Randy picks up steam,” “Hurricane Randy is creating high wind conditions,” and “Hurricane Randy approaches the coast.”

Measures

Perceptions of hurricane severity were assessed with 2 items on a 7-point scale of agreement (ranging from “not very many” to very many” or “not very severe” to “very severe”) by asking the question: “How many deaths do you think occur every year from hurricanes?” And, “How severe is the average hurricane?”

Perceptions of trust were assessed with a 4-item adaptation of the RAND Public Health Disaster Trust scale (Eisenman et al., 2012). The RAND scale was used because related variables (specifically, the emergent citizen organization – Stormwatch Randy, and the government organization – FEMA) were assessed at the organizational level. Previous

research has shown the scale to be reliable and valid when compared to extant communication scales (Lachlan, Spence, Edwards, Reno & Edwards, 2014; Spence et al, 2016). These items included: 1) “How confident are you that FEMA (or Stormwatch Randy) can respond fairly to your health needs, regardless of you race, ethnicity, income, or other personal characteristics)? 2) “How confident are you that FEMA (or Stormwatch Randy) provides honest information to the public? 3) “How confident are you that FEMA (or Stormwatch Randy) can respond effectively to protect the health of the public?” And, 4) “If there were a health problem associated with Hurricane Randy, and this organization needed to collect information from you, how confident are you that this information would not be used against you?” Before analysis for the current study, the four trust questions were combined into a single item ($\alpha = .85$).

Behavioral intentions were assessed via 4 items on a 7-point likert-type scale (ranging from “not at all” to “very likely”). Similar to Westerman, Spence, and Lachlan (2009), respondents were asked, “How likely are you to contribute money to Hurricane Randy relief efforts?” And, “How likely are you to contribute time to Hurricane Randy relief efforts?” Also, participants were asked “How likely are you to provide voluntary geographic data about current storm conditions if you were near the storm?” And, “How likely are you to provide voluntary geographic data about damage caused by the storm?”

Chapter Summary

This chapter began with an overview of experimental research design and benefits of such experiments over other methods. Two studies were proposed to test exemplification effects in the context of natural disasters. Study one was designed to test for exemplification effects across various stages of disaster using the three stage model of pre-

crisis, crisis, and post-crisis. Furthermore, study one explored potential differences in information seeking depending on the stage of exemplified disaster.

Study two tested for exemplification effects across various stages of a different type of disaster. Study two also investigated whether social media feeds containing exemplars would have different effects depending on the source of exemplars. Furthermore, likelihood to volunteer time, money, and geographic data about storm damage were assessed in relation to the crisis stage of the exemplified disaster and social media source (emergent citizen organization vs. government organization. Experimental designs, conceptual operationalization, recruitment procedures, treatment protocols, and measurement instruments for each of the studies were explicated throughout chapter three.

CHAPTER 4: RESULTS

Study One

Participants

A total of 278 valid responses were collected for this study from a large southern research university, with 32% males ($n = 89$) and 67.3% females ($n = 187$) and .7 % not reporting. Of these participants, 71.9% reported their ages ($M = 20.6$, $SD = 9.61$). Most of the participants identified themselves as Caucasian (77%), followed by Asian (8.3%), African-American (7.9%), Latino (2.5%), and other races (3.6%). The majority of the respondents came from high and middle socio-economic levels, with 41.7% reporting annual household income over \$100,000, 34.1% between \$50,001 and \$100,000, and 15.4% between \$20,001 and \$50,000, and 7.6% below \$20,000 (see Table 4.1).

The participants also reported their daily Twitter usage behaviors. On average, these participants reported checking Twitter 19.8 times a day ($SD = 23.9$), spending 33.5 minutes daily on Twitter ($SD = 29.6$), and following 323.4 users ($SD = 434.9$) (See Table 4.1).

Severity by Death

To answer RQ1, a series of 2 X 3 ANOVA analyses was performed to examine the difference between impact of exemplified image presence (present vs. not present) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on perceptions of tornado severity (how many deaths participants thought occurred each year from tornado). Before conducting the ANOVA the two dependent variables related to perceptions of severity were tested to see if they were highly correlated, which they were not ($.158$, $p = .008$). Main effects were not detected for crisis stage, $F(2, 272) = 1.435$, $p = .240$, $\eta^2 = .010$,

Power = .306. Main effects were not detected for presence or absence of exemplified image, $F(1, 271) = .171, p = .679, \eta^2 = .001$, Power = .070. Neither was there any interaction effect detected between the two, $F(2, 271) = .827, p = .438, \eta^2 = .006$, Power = .191. Descriptive statistics are included in Table 4.2 along with Tukey *post-hoc* results in Table 4.3

Severity by Tornado Severity

Another 2 X 3 ANOVA analysis was performed to examine the difference between impact of exemplified image presence (present vs. not present) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on perceptions of tornado severity (how severe is the average tornado). Main effects were not detected for crisis stage, $F(2, 271) = .040, p = .961, \eta^2 = .000$, Power = .056. Main effects were not detected for presence or absence of exemplified image, $F(1, 271) = .009, p = .925, \eta^2 = .000$, Power = .051. Neither was there any interaction effect detected between the two, $F(2, 271) = 1.006, p = .367, \eta^2 = .007$, Power = .224. Descriptive statistics are included in Table 4.4 along with Tukey *post-hoc* results in Table 4.5

Information Seeking

To answer RQ2, a 2 X 3 ANOVA analysis examined the impact of exemplified image presence (present vs. not present) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on desire to seek information. Main effects were not detected for crisis stage, $F(2, 271) = .787, p = .456, \eta^2 = .006$, Power = .184. Main effects were not detected for presence or absence of exemplified image, $F(1, 271) = 1.4102, p = .237, \eta^2 = .005$, Power = .219. Neither was there any interaction effect detected between the two, $F(2, 271) = 1.660, p =$

.192, $\eta^2 = .012$, Power = .349. Descriptive statistics are included in Table 4.6 along with Tukey *post-hoc* results in Table 4.7.

Retweet

To understand intentions to resend crisis messages, a 2 X3 ANOVA analysis examined the impact of exemplified image presence (present vs. not present) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to retweet. Main effects were not detected for crisis stage, $F(2, 266) = 1.386$, $p = .252$, $\eta^2 = .010$, Power = .297. Main effects were not detected for presence or absence of exemplified image, $F(1, 266) = .869$, $p = .352$, $\eta^2 = .003$, Power = .153. Neither was there any interaction effect detected between the two, $F(2, 266) = .302$, $p = .739$, $\eta^2 = .002$, Power = .098. Descriptive statistics are included in Table 4.8 along with Tukey *post-hoc* results in Table 4.9.

Study 2

Participants

A total of 386 valid responses were collected for this study from a large southern research university, with 54.4% males ($n = 206$) and 46.3% females ($n = 179$) and .3 % not reporting. Of these participants, 72.8% reported their ages ($M = 20.6$, $SD = 8.25$). Most of the participants identified themselves as Caucasian (79.3%), followed by African-American (9.1%), Asian (5.2%), Latino (1.8%), and other races (4.1%). The majority of the respondents came from high and middle socio-economic levels, with 44.6% reporting annual household income over \$100,000, 33.7% between \$50,001 and \$100,000, and 13% between \$20,001 and \$50,000, and 8% below \$20,000 (see Table 4.10).

The participants also reported their daily Twitter usage behaviors. On average, these participants reported checking Twitter 22.34 times a day ($SD = 24.69$), spending 38.15 minutes daily on Twitter ($SD = 32.94$), and following 321.73 users ($SD = 428.32$) (See Table 4.10).

Trust

To answer RQ3, a 2 X 3 ANOVA analysis was performed to examine the difference between impact of organization type (government vs emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on trust. Main effects were detected for organization type, $F(1, 378) = 9.034, p=.003, \eta^2=.023, \text{Power} = .850$. Participants viewing the government organization (FEMA) twitter feed were significantly more likely to perceive higher levels of trust ($M = 2.94, SD = 0.66$) than those viewing one from an emergent citizen group ($M = 2.73, SD, = .69$), see Table 4.11. Main effects were not detected for crisis stage, $F(2, 378) = .438, p= .645, \eta^2 =.002, \text{Power} =.121$. Neither was there any interaction effect detected between the two, $F(2, 378) = .536, p= .586, \eta^2 = .003, \text{Power}= .138$. Descriptive statistics are included in Table 4.12 along with Tukey *post-hoc* results in Table 4.13.

Severity

To test RQ4, a 2 X 3 ANOVA analysis was performed to examine the difference between impact of organization type (government vs emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on perceptions of hurricane severity (how many deaths occur every year) as portrayed in a pictorial exemplar. Before conducting the ANOVA the two dependent variables related to perceptions of severity were tested to see if they were highly correlated, and they were moderately ($.334, p= .000$). Main effects

were not detected for organization type, $F(1, 380) = .377, p = .540, \eta^2 = .001, \text{Power} = .094$. Main effects were not detected for crisis stage, $F(2, 380) = .352, p = .704, \eta^2 = .002, \text{Power} = .106$. Neither was there any interaction effect detected between the two, $F(2, 380) = 1.056, p = .349, \eta^2 = .006, \text{Power} = .235$. Descriptive statistics are included in Table 4.14 along with Tukey *post-hoc* results in Table 4.15.

An additional 2 X 3 ANOVA analysis was performed to examine the difference between impact of organization type (government vs emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on perceptions of hurricane severity (how severe is the average hurricane). Main effects were detected for organization type, $F(1, 376) = 4.303, p = .039, \eta^2 = .011, \text{Power} = .543$. Participants viewing the government organization (FEMA) twitter feed were significantly more likely to perceive higher levels of hurricane severity ($M = 4.64, SD = 1.28$) than those viewing one from an emergent citizen group ($M = 4.38, SD = 1.335$) (see Table, 4.16). Main effects were not detected for crisis stage, $F(2, 376) = .852, p = .427, \eta^2 = .005, \text{Power} = .196$. Neither was there any interaction effect detected between the two, $F(2, 376) = 1.224, p = .295, \eta^2 = .006, \text{Power} = .267$. Descriptive statistics are included in Table 4.17 along with Tukey *post-hoc* results in Table 4.18.

Behavioral Intentions

To answer RQ5, a series of ANOVAs were used to examine perceptions of intention to volunteer time, money, geographic data about storm conditions, and geographic data about storm damage.

Money

First, a 2 X 3 ANOVA analysis examined the impact of organization type (government vs. emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to contribute money to hurricane relief efforts. Main effects were not detected for organization type, $F(1, 380) = .094, p=.760, \eta^2=.000, \text{Power} = .061$. Main effects were not detected for crisis stage, $F(2, 380) = .031, p= .970, \eta^2 =.000, \text{Power} =.055$. Neither was there any interaction effect detected between the two, $F(2, 380) = .040, p= .961, \eta^2 = .000, \text{Power}= .056$. Descriptive statistics are included in Table 4.19 along with Tukey *post-hoc* results in Table 4.20.

Time

A 2 X 3 ANOVA analysis examined the impact of organization type (government vs. emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to contribute time to hurricane relief efforts. Main effects were not detected for organization type, $F(1, 379) = .424, p=.515, \eta^2=.001, \text{Power} = .100$. Main effects were not detected for crisis stage, $F(2, 379) = .069, p= .933, \eta^2 =.000, \text{Power} =.060$. Neither was there any interaction effect detected between the two, $F(2, 379) = .420, p= .658, \eta^2 = .002, \text{Power}= .118$. Descriptive statistics are included in Table 4.21 along with Tukey *post-hoc* results in Table 4.22.

Geographic Storm Condition Data

A 2 X 3 ANOVA analysis examined the impact of organization type (government vs. emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to contribute geographic storm condition data to hurricane relief efforts. Main effects were not detected for organization type, $F(1, 380) = .105, p=.746, \eta^2=.000, \text{Power}$

= .062. Main effects were not detected for crisis stage, $F(2, 380) = 1.199, p = .303, \eta^2 = .006$, Power = .262. However, there was an interaction effect detected between the two, $F(2, 380) = 3.625, p = .028, \eta^2 = .019$, Power = .668. Descriptive statistics are included in Table 4.23 along with Tukey *post-hoc* results in Table 4.24. For the interaction effect between organization type and crisis stage, participants were significantly more likely to volunteer geographic data about current storm conditions to an emergent citizen organization in the crisis stage ($M = 4.05, SD = 1.67$) than in the post-crisis stage ($M = 3.28, SD = 1.79$).

Geographic Storm Damage Data

Another 2 X 3 ANOVA analysis examined the impact of organization type (government vs. emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to contribute geographic storm *damage* data to hurricane relief efforts. Main effects were not detected for organization type, $F(1, 379) = .339, p = .561, \eta^2 = .001$, Power = .089. Main effects were not detected for crisis stage, $F(2, 379) = .330, p = .719, \eta^2 = .002$, Power = .103. However, there was an interaction effect detected between the two, $F(2, 379) = 4.508, p = .012, \eta^2 = .023$, Power = .768. Descriptive statistics are included in Table 4.25 along with Tukey *post-hoc* results in Table 4.26. For the interaction effect between organization type and crisis stage, participants were significantly more likely to volunteer geographic data about storm damage to an emergent citizen organization in the crisis stage ($M = 4.23, SD = 1.66$) than in the post-crisis stage ($M = 3.57, SD = 1.99$). Conversely, participants were significantly more likely to volunteer geographic data about storm damage to a government

organization in the post-crisis stage ($M=4.12$, $SD= 1.84$) than in the crisis stage ($M= 3.43$, $SD = 1.85$).

Retweet

To understand intentions to resend crisis messages, a 2 X3 ANOVA analysis examined the impact of organization type (government vs. emergent citizen group) and of crisis stage (pre-crisis vs. crisis vs. post-crisis) on intentions to retweet. Main effects were not detected for organization type, $F(1, 360) = 1.544$, $p=.215$, $\eta^2=.004$, Power = .236. Main effects were not detected for crisis stage, $F(2, 360) = 1.448$, $p= .236$, $\eta^2 =.008$, Power =.309. Neither was there any interaction effect detected between the two, $F(2, 360) = .095$, $p= .909$, $\eta^2 = .001$, Power= .064. Descriptive statistics are included in Table 4.27 along with Tukey *post-hoc* results in Table 4.28.

Summary

This chapter presented the analyzed data from each study about exemplification and disaster stages. For study one, there were not significant differences found concerning the influence of various disaster stages, or presence or absence of an exemplar, on the dependent variables of perceptions of severity, information seeking, or intentions to retweet messages. For study two, exemplification effects were not significantly different for the various crisis stages. However, exemplification effects were different depending on organization type. Furthermore, perceptions of trust varied depending on the organization sending the exemplars. The government organization was trusted more than the emergent citizen group. Finally, there was an interaction effect between crisis stage and organization type on intentions to volunteer geographic storm condition data and geographic storm damage data.

Table 4.1

Study 1: Demographic Characteristics of Participants

	<i>N</i> (%)	<i>M</i>	<i>SD</i>
Sex			
Male	89 (32)		
Female	187 (67.3)		
Age (18-99)	200	20.6	9.61
Race			
Caucasian	214 (77.0)		
African-American	22 (7.9)		
Asian	23 (78.3)		
Latino	7 (32.5)		
Others	10 (3.6)		
Income			
Under \$20,000	21 (7.6)		
\$20,000 - \$30,000	14 (5.0)		
\$30,001 - \$50,000	29 (10.4)		
\$50,001 - \$70,000	34 (12.2)		
\$70,001 - \$100,000	61 (21.9)		
Over \$ 100,000	116 (41.7)		
Twitter Daily Usage Frequency			
Checking Twitter (times/day)	247	19.77	23.89
Length on Twitter (min/day)	237	33.47	29.59
Users Following on Twitter	238	323.39	434.94
<i>N</i>	278		

Table 4.2

Study One: Descriptive Statistics for Perceptions of Severity (how many deaths per year by tornado) as a Function of Exemplar presence and Crisis Stage

Crisis Stage	No Photographic Exemplar			Photographic Exemplar		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	45	4.18	1.74	54	4.44	1.69
Crisis	47	4.32	1.73	44	4.59	1.39
Post-crisis	38	4.87	1.63	50	4.58	1.77

Note: N = 278.

Table 4.3

Study One: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Severity (how many deaths)

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	4.32 (1.71)			
Crisis	4.45 (1.57)			
Post-Crisis	4.7 (1.71)			

Note: $F(2, 272) = 1.435, p = .240, \eta^2 = .010, \text{Power} = .306$

Table 4.4

Study One: Descriptive Statistics for Perceptions of Severity (how severe is the average tornado) as a Function of Exemplar presence and Crisis Stage

Crisis Stage	No Photographic Exemplar			Photographic Exemplar		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	45	3.89	1.32	54	4.06	1.32
Crisis	46	3.89	1.16	44	4.00	1.16
Post-crisis	38	4.16	1.15	50	3.84	1.32

Note: N = 277.

Table 4.5

Study One: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Severity (how severe is the average tornado)

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	3.98 (1.32)			
Crisis	3.94 (1.16)			
Post-Crisis	3.98 (1.25)			

Note: $F(2, 271) = .040, p = .961, \eta^2 = .000, \text{Power} = .056$

Table 4.6

Study One: Descriptive Statistics for Information Seeking as a Function of Exemplar presence and Crisis Stage

Crisis Stage	No Photographic Exemplar			Photographic Exemplar		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	45	4.54	1.12	54	5.1	1.17
Crisis	47	4.68	1.26	44	4.73	1.33
Post-crisis	37	4.62	1.36	50	4.55	1.50

Note: $N = 277$.

Table 4.7

Study One: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Information Seeking

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	4.85 (1.18)			
Crisis	4.7 (1.19)			
Post-Crisis	3.58 (1.43)			

Note: $F(2, 271) = .787, p = .456, \eta^2 = .006, \text{Power} = .184$

Table 4.8

Study One: Descriptive Statistics for Retweet as a Function of Exemplar presence and Crisis Stage

Crisis Stage	No Photographic Exemplar			Photographic Exemplar		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	44	2.02	1.27	53	2.34	1.41
Crisis	45	2.16	1.38	44	2.18	1.33
Post-crisis	36	1.83	1.18	50	1.94	1.27

Note: N = 272.

Table 4.9

Study One: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Retweet

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	2.20 (1.35)			
Crisis	2.17 (1.35)			
Post-Crisis	1.90 (1.33)			

Note: F(2, 266) = 1.386, p = .252, $\eta^2 = .010$, Power = .297

Table 4.10

Study 2 Disaster Stages: Demographic Characteristics of Participants

	<i>N</i> (%)	<i>M</i>	<i>SD</i>
Sex			
Male	206 (53.4)		
Female	179 (46.3)		
Age (18-99)	281	20.6	8.25
Race			
Caucasian	306 (79.3)		
African-American	35 (9.1)		
Asian	20 (5.2)		
Latino	7 (1.8)		
Others	16 (4.1)		
Income			
Under \$20,000	31 (8.0)		
\$20,000 - \$30,000	20 (5.2)		
\$30,001 - \$50,000	30 (7.8)		
\$50,001 - \$70,000	50 (13.0)		
\$70,001 - \$100,000	80 (20.7)		
Over \$ 100,000	172 (44.6)		
Twitter Daily Usage Frequency			
Checking Twitter (times/day)	335	22.34	24.69
Length on Twitter (min/day)	322	38.15	32.94
Users Following on Twitter	318	321.73	428.32
<i>N</i>	386		

Table 4.11

Study Two: Descriptive Statistics for Perceptions of Trust as a Function of Organization type only

	Government Org			Emergent Citizen		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Total	180	2.94	0.66	204	2.73	0.69

Note: N = 384.

Table 4.12

Study Two: Descriptive Statistics for Perceptions of Trust as a Function of Organization type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	62	2.90	0.66	60	2.79	0.67
Crisis	52	3.02	0.67	72	2.74	0.70
Post-crisis	66	2.92	0.67	72	2.68	0.70

Note: N = 384.

Table 4.13

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Trust

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	2.85 (0.66)			
Crisis	2.86 (0.70)			
Post-Crisis	2.80 (0.69)			

Note: $F(2, 378) = .438, p = .645, \eta^2 = .002$

Table 4.14

Study Two: Descriptive Statistics for Perceptions of Severity (how many deaths per year) as a function of Organization Type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	62	4.66	1.35	60	4.33	1.47
Crisis	53	4.25	1.60	73	4.45	1.50
Post-crisis	66	4.55	1.52	72	4.39	1.40

Note: $N = 386$.

Table 4.15

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Severity (how many deaths are caused)

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	4.5 (1.45)			
Crisis	4.37 (1.54)			
Post-Crisis	4.46 (1.46)			

Note: $F(2, 380) = .352, p = .704, \eta^2 = .002$

Table 4.16

Study Two: Descriptive Statistics for Perceptions of Severity (how severe is the average hurricane) as a Function of Organization type only

	Government Org			Emergent Citizen		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Total	179	4.64	1.28	203	4.38	1.33

Note: $N = 384$.

Table 4.17

Study Two: Descriptive Statistics for Perceptions of Severity (how severe is the average hurricane) as a function of Organization Type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	61	4.70	1.28	60	4.17	1.26
Crisis	53	4.77	1.47	72	4.50	1.29
Post-crisis	65	4.48	1.13	71	4.45	1.43

Note: $N = 382$.

Table 4.18

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Severity (severe is the average hurricane)

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	4.44 (1.30)			
Crisis	4.62 (1.36)			
Post-Crisis	4.46 (1.29)			

Note: $F(2, 376) = .852, p = .427, \eta^2 = .005$

Table 4.19

Study Two: Descriptive Statistics for volunteering money as a Function of Organization type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen Group		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	62	3.34	1.80	60	3.25	1.51
Crisis	53	3.34	1.53	73	3.26	1.49
Post-crisis	66	3.33	1.79	72	3.35	1.67

Note: $N = 386$.

Table 4.20

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on donating money

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	3.30 (1.66)			
Crisis	3.29 (1.50)			
Post-Crisis	3.34 (1.72)			

Note: F(2, 380) = .031, p= .970, η^2 =.000, Power =.055

Table 4.21

Study Two: Descriptive Statistics for volunteering time as a Function of Organization type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen Group		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	62	3.10	1.60	60	3.40	1.63
Crisis	53	3.26	1.52	73	3.37	1.69
Post-crisis	65	3.35	1.72	72	3.28	1.76

Note: N =386.

Table 4.22

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on donating money

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	3.25 (1.61)			
Crisis	3.33 (1.61)			
Post-Crisis	3.31 (1.74)			

Note: F(2, 379) = .069, p= .933, η^2 =.000, Power =.060

Table 4.23

Study Two: Descriptive Statistics for volunteering geographic storm condition data as a Function of Organization type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen Group		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	62	3.34	2.00	60	3.45	1.51
Crisis	53	3.43	1.68	73	4.05	1.67
Post-crisis	66	3.83	1.92	72	3.28	1.79

Note: N = 386.

Table 4.24

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on donating geographic storm condition data

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	3.39 (1.77)			
Crisis	3.79 (1.69)			
Post-Crisis	3.54 (1.86)			

Note: $F(2, 380) = 1.199, p = .303, \eta^2 = .006, \text{Power} = .262$

Table 4.25

Study Two: Descriptive Statistics for volunteering geographic storm damage data as a Function of Organization type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizen Group		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	61	3.64	1.95	60	3.72	1.54
Crisis	53	3.43	1.85	73	4.23	1.66
Post-crisis	66	4.12	1.84	72	3.57	1.99

Note: N = 385.

Table 4.26

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on donating geographic storm damage data

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	3.69 (1.75)			
Crisis	3.90 (1.78)			
Post-Crisis	3.83 (1.93)			

Note: $F(2, 379) = .330, p = .719, \eta^2 = .002, \text{Power} = .103$

Table 4.27

Study Two: Descriptive Statistics for Retweet as a Function of Organization Type and Crisis Stage

Crisis Stage	Government Org			Emergent Citizens		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Pre-crisis	61	2.44	1.30	54	2.28	1.12
Crisis	51	2.75	1.44	71	2.51	1.26
Post-crisis	33	2.46	1.27	66	2.36	1.25

Note: $N = 366$.

Table 4.28

Study Two: Tukey Post-hoc Test Multiple Comparisons for Crisis Stage on Retweet

Crisis Stage	<i>M (SD)</i>	Pre-crisis	Crisis	Post-Crisis
Pre-crisis	2.37 (1.22)			
Crisis	2.61 (1.34)			
Post-Crisis	2.41 (1.25)			

Note: $F(2, 360) = 1.448, p = .236, \eta^2 = .008, \text{Power} = .309$

CHAPTER 5: DISCUSSION

General Discussion

An increase in the frequency of natural disasters combined with the need of crisis managers to communicate effectively throughout various stages of potentially catastrophic events led to the current research project. Various stage models of crisis communication exist, yet systematic research has not yet been undertaken to understand how perceptions of disasters and intentions to take various protective actions change throughout different crisis stages. Because research indicates that individuals experience various feelings and perceptions before (i.e. Covello & Sandman, 2001; Sjöberg, 2000;), during (Nelson et al., 2009; Spence, Lachlan, Lin & Del Greco, 2015; Reynolds & Seeger, 2005), and after (Fredrickson et al., 2003; Goto et al., 2014; Reynolds & Seeger, 2005; Tierney et al., 2006) natural disasters, the purpose of this research was to explore potential differences of behavioral intentions, and perceptions of severity, depending on: the stage of crisis expressed in messages, exemplar presence or absence, and the organizational source of the message.

Exemplification theory (Zillmann, 1999, 2002) elaborates on the ability of media examples to influence perceptions of issues even after minimal exposure. Zillmann (2006) suggested that the theory may be useful in helping motivate self-protective behavior. However, potential changes in intentions to protect oneself, or seek further information, likely vary during different disaster stages. Therefore, this study examined exemplars in social media to explore their potential influence on information seeking and perceptions of severity through multiple crisis stages. Study one found no significant differences in intentions to seek information, or perceptions of severity, throughout

different disaster stages. Furthermore, the presence or absence of an exemplar did not significantly influence intentions to seek information or perceptions of severity. However, the pattern of means for information seeking and perceptions of severity did generally align with the tenets of exemplification theory outside of the post-crisis stage. Intentions to retweet messages were also not significantly influenced by crisis stage or exemplar presence. The results of study two indicated that organizational trust was higher for a Twitter feed supplied from a government organization than an emergency citizen group page. Furthermore, perceptions of severity were higher when an exemplar was on a government organization social media page rather than an emergent citizen group social media page. Perceptions of severity and trust did not vary throughout different disaster stages. However, intentions to volunteer did vary depending on the disaster stage. The findings from this research, theoretical implications, practical tips, and limitations are discussed below.

Study One

Study one used an experimental design to test exemplification effects in social media throughout various disaster stages. Participants viewed a mock Twitter feed that announced tornado damage or the potential for damage. The six conditions for the study were comprised of combinations of three disaster stages (pre-crisis, crisis, and post-crisis) and the presence or absence of a pictorial exemplar. The disaster stage was manipulated by changing the tense of the wording in the social media announcements and changing the description of the exemplar to match the stage of the crisis portrayed in the social media feed. The pictorial exemplar was half of a McDonald's golden arch stuck in electrical wires as the result of a tornado.

Primary Findings

The purpose of research question one was to discover if perceptions of tornado severity would differ depending on the disaster stage in which a pictorial exemplar was shown. Results were not significant for differences in perceptions of severity throughout various disaster stages. Differences in perceptions of severity measured in the experiment included general perceptions of severity (How severe is the average tornado?) and perceptions of the likelihood of death (Approximately how many people die from tornados ever year?). Neither of these perceptions of severity changed depending on the crisis stage. In reference to research question two, the results indicated no significantly different intentions to seek information depending on disaster stage or presence or absence of exemplar. Furthermore, there were no differences in intentions to retweet messages. Potential reasons and scholarly explanations for these findings are offered below.

First, the amount of timing between the various disaster stages may not have been great enough to create significant reactionary differences. Previous scholarship reports that the changing nature of disasters has not been adequately detailed (Veil et al., 2008). Therefore, this research is a starting point on changing perceptions. This exploratory study used a time sequence that separated each crisis stage in study one by about 3-4 days in the social media manipulations. The pre-crisis social media feed included a message that said “There is a high risk for tornado activity in the next few days.” The post crisis stage talked about damage created “last week.” Using a greater time manipulation may have created dissimilar results. Using a greater time manipulation along with more information about the context of the storm and related emergency response efforts may

have added enough elements to create varying reactions. For example, public outrage (see Sandman, 2003) may increase if response quality is perceived to be poor (Spence et al., 2007). And, being reminded of disasters can reduce positive thoughts (Västfjäll et al., 2008). Having a longer twitter feed with more information about the overall storm development and may have yielded different results.

Furthermore, perceptions of severity and behavioral intentions did not significantly differ depending on the presence or absence of a pictorial exemplar. Exemplar choice may have impacted results for several reasons. The image used in this research was chosen because iconic, emotional, and concrete exemplars are proposed to have stronger perceptual influence than less dramatic exemplars (Zillmann, 2002). The golden McDonald's arch is somewhat iconic because of the worldwide presence of the brand but may not have held enough emotional impact to create significant reactions. A picture of an arch in an electrical line does not pose much of a direct threat. However, an image of a tornado – which would likely produce a stronger perception of threat – may have created stronger reactions in participants. For example, Westerman et al. (2015) used bed bugs as a manipulation in their study of exemplification effects. The skin damage from bed bugs represented a potential direct threat, whereas a golden arch in an electrical line represents less of a direct threat. A bed bug can produce discomfort and damage, but the arch was in a stable position and did not pose as much of a potential risk. Rather, the arch served to show what the “threat” of a tornado could do and was not a threat in and of itself.

Also, exemplification effects do not always occur immediately. That is, exemplification effects sometimes grow over time after less dramatic information is

forgotten. Gibson and Zillmann (1994) found that perceptions of violent carjacking frequencies were higher one week after an experimental manipulation rather than immediately after the experiment. Differences in perceptions of images throughout disaster stages may have been somewhat different if tested at a later time. Media consumers do not always follow disasters from start to finish. With such a media saturated society, and unless a particular disaster is of immediate interest, only bits and pieces of news events are made salient or attended to. Therefore, testing sleeper effects may experimentally be possible for disaster stages. However, sleeper effects may be more appropriate to study in situations where the crisis stages are divided up into larger segments than the current studies' relatively short stages.

Additionally, research shows that multiple cues are used when assessing disaster situations. One of these cues is social assessment. Caldini & Trost (1998) report that individuals in unfamiliar situations tend to judge events based on the social reactions of others. The image used in this social media feed did not include any humans or human related reactions. Also, the twitter feed did not include any reactionary messages from the sending organization or other potential commenters and were rather dry postings about what was happening, might happen, or had happened (no overly dramatic language was used). Having more emotional language in the twitter feed, or people and social reactions in the image, might have acted as stronger disaster cues for participants taking part in the study. Social cues are often relied upon in unknown situations (Sorensen, 2000; Caldini & Trost, 1998; Rod et al., 2012; Spence et al., 2006; Mileti & Beck, 1975) and may have created stronger perceptions of risk if included in the exemplar in study one. For example, Zillmann, Gibson, and Sargent (1999) found that showing a picture a person

getting loaded into an ambulance created stronger exemplification effects than having no image at all. The exemplification effects may have been stronger because of the perceptions of danger afforded by the image of another hurt individual.

Similarly, Westernman et al. (2015) found that social presence, when virtual individuals are assessed as actual social participants (see Lee, 2004), was connected to an increase in exemplification effects. Additionally, Sundar, Knobloch-Westerwick, & Hastall (2007) suggest a cue-cumulative phenomena where multiple cues can alter perceptions more strongly than singular cues. Twitter contains various social cues that may have potential influence on perceptions such as: number of likes, retweeted messages, and number of followers. Therefore, through various avenues – images of people, comments, and multiple credibility cues – social influence may the potential to exert influence on exemplification effects.

Limitations and Future Directions

A static social media page may not accurately mimic a live page (for a wider discussion on social media crisis research, see Spence, et al., 2016) and may not represent the highest level of ecological validity. Nevertheless, the manipulation for this research did accurately mimic a real twitter feed and was composed in a manner that precisely represented the social media page of the Centers for Disease Control and Prevention Twitter page (@CDCgov) at the time the manipulation was created.

Risk communication is more than simply envisioning and composing messages (Palenchar & Health, 2007). Future research needs explore more details of potential exemplification effects through various disaster stages. The current study used a time frame of a few days between each disaster stage. Using different time sequences in

research will likely vary depending on what disaster is being used in a particular study. Future research could test messages that include crisis stages that vary in minutes, hours, days, months, or even years. Furthermore, varied times could be studied for multiple disaster types to see if differences might occur depending on crisis type.

Additionally, the exemplar in this study was iconic but might not have been emotional enough to produce significant results. As formerly mentioned, Westerman et al. (2015) used an image in their bed bug study that included a human arm with “many bed bug bites” (p. 97). Having personal damage (for example, someone injured by the tornado) rather than property damage may have produced different results. Future research should study how exemplification effects differ when an image displays a potential threat versus actual damage, personal damage versus property damage, and differences in perceptions for various types of disasters.

Furthermore, researchers could explore differences in exemplification effects for threats that are inherently positive threats versus those that are inherently negative threats. Research suggests that exemplars were typically negative for the recent Ebola crisis (Sellnow-Richmond, George, & Sellnow, 2018). And, Ebola does represent an immediate negative health threat. However, other topics are not quite as innately dangerous or threatening. For example, Zillmann et al. (1999) studied a roller coaster to see if various pictorial exemplars, or their absence, would influence exemplification effects. One exemplar included people happily riding a roller coaster, while another exemplar showed someone being loaded into an ambulance with a roller coaster in the immediate background. Roller coasters, the topic of interest, were created to create joy and shock. These experimental conditions may yield different results when researching

topics that are innately dangerous such as attacks from predatory animals or injuries from heinous storms. And, research has yet to systematically define distinctions in exemplification effects between personal and mediated experience (see Zillmann, 2002) and whether or not certain exemplars are more relatable to various audiences.

None of the questions showed significant results depending on the presence or absence of the pictorial exemplar. This could be due to the sample size. Having a smaller sample size decreases statistical power, that is, the ability to determine an effect. Statistical power is “1 minus the probability of committing a Type II error (failing to reject a false null hypothesis)” (Frey et al., 2000, p. 333) and is considered favorable above .80. Having a larger sample size increases power “as the chances of rejecting a null hypothesis that is false are increased when more people are studied” (Frey et al., 2000, p. 334). Also, detecting large effects can be done with a sample of less than 30 for each group, however, detecting small effects may require a sample closer to 400 per group (Cohen, 1992). Therefore, the current study was limited in that it may not have had enough participants to detect potential effects created by the research manipulations. Additionally, the pattern of means did show that the conditions with the exemplar were generally perceived to be more severe than the conditions without the exemplar. It may be possible that using a larger sample size may have yielded significant results.

Finally, the sample was a conveniences sample and could give rise to bias through the nature of the selection of participants on a college campus (see Sears, 1986). Nevertheless, exemplars are explained by Zillmann (2006) to have effects that are broadly influential.

Study Two

The second study used an experimental design to test for differences in exemplification effects and intentions to volunteer during a disaster depending on crisis stage and organization type. Participants viewed a mock Twitter feed that announced hurricane damage or the potential thereof. The six conditions of the study were made up of a combination of disaster stages and organizational source. The three disaster stages were pre-crisis, crisis, and post-crisis, and the two organizations were a governmental organization (FEMA) and an emergent citizen group (Storm Watch Randy). The FEMA Twitter page was made to mimic the actual FEMA social media page. The Storm Watch Randy Twitter page was essentially identical to the FEMA page except for the name of the organization, the symbol used to represent the organization, and the description of the organization. Storm Watch Randy was described as "...a recently formed volunteer citizen group...with a mission to keep the public aware of developments concerning Hurricane Randy." The disaster stage was manipulated by changing the tense of the wording on the social media page and by changing the descriptions for the exemplars embedded in the feed. The exemplars were vivid images that included a satellite view of a gigantic hurricane approaching the east coast of Florida, large waves crashing against a pier, and strong wind blowing against palm trees.

Primary Findings

The purpose of research question three was to discover if emergent citizen organizations would be as trusted as government organizations in social media during natural disasters. Results indicated that the government organization (FEMA) was more trusted than the emergent citizen group (Storm Watch Randy). Participants generally had

higher confidence that the government organization could respond fairly, provide honest information, and respond more effectively than could the emergency citizen group. Trust is an important ingredient in disaster response. Poor trust may negatively influence community safety (Perreault et al., 2014) because messages are not deemed reliable or credible.

Trust, a component of social capital (Nah, 2010; Putnam, 1993), may influence disaster response in various ways. Social capital can be drawn upon in a crisis (Reininger et al., 2013). If organizations are not trusted, directions for self-protection may be ignored and solicitation of volunteer opportunities may land on deaf ears. And because social capital boosts cooperation (Putnam, 1993), and trust is a primary component of social capital, having low perceptions of trust should be understood as problematic from an organizational perspective – especially in disaster situations.

However, emergent citizen groups may have the ability to fill information gaps not covered by legacy media (Chen et al., 2012) and therefore should not be ignored. Best practices in crisis response include collaboration and coordination with credible sources (Seeger, 2006). Cybernetic social capital (see Lin, 1999) created through online information sharing networks create the opportunity for multiple organizations to work together in times of crisis. Crisis communicators should “continuously seek to validate sources, choose subject-area experts, and develop relationships with stakeholders at all levels” (Seeger, 2006, p. 240). Even though a citizen group may not be as trusted as a government organization, they can still share valuable information to organizations that are more trusted but lack local reconnaissance. Furthermore, the potential exists that

emergent citizen group supplied information may gain credibility if highlighted by a government organization that is perceived as more trustworthy.

The ideal storytelling system that has breadth, depth, and is well integrated (see Ball-Rokeach et al., 2001) will be well represented when government, news, and local organizations productively connect. Crisis communication experts should have a plan that incorporates social media specifically: “Public health and national security agencies including federal, state, and local levels should develop social media policies for emergency management to enhance their crisis response capabilities (Lin, Spence, Sellnow, & Lachlan, 2016, p. 602). Part of this plan should be adequately coordinating with those locally affected (Seeger, 2006) in order share intelligence and coordinate safety information.

Additionally, although the emergent citizen group was not as highly trusted as the government organization, the differences in perception of trust were not so dramatic that emergent citizen organizations should be discouraged from sharing information during a crisis. The difference in the means for perceptions of trust was about 7% greater for the government organization. Both organizations received participant responses that averaged higher than “Not at all confident” and “Not too confident” regarding organizational trustworthiness. Therefore, emergent citizen groups, even if they cannot close the trust gap with a more established institution such as FEMA (in the current study), may still yield valuable contributions to disaster response efforts.

Research question four was posed with the purpose of discovering potential differences in exemplification effects between an emergent citizen group and a government organization. Both organizations included the same three pictorial

exemplars. No significant differences were found in perceptions of how likely one is to die from a hurricane. However, participants viewing the exemplars on the government Twitter feed reported significantly higher perceptions of severity for the average hurricane than did participants viewing the same exemplars on an emergent citizen group Twitter feed. Perceptions of severity did not significantly differ depending on the disaster stage pronounced in the social media feeds.

Having greater exemplification effects because of the source of the exemplar is important to note because of the potential increase these effects may have on intentions to seek information and intentions to take self-preservation enhancing behaviors (see Zillmann, 2006). Notwithstanding, emergent citizen groups may not be taken as seriously as established government organizations which may in turn decrease exemplification effects. Notably, the emergent citizen group was the less trusted organization in this study.

Exemplification effects have been shown to increase with perceptual realism, spatial presence (Westerman et al., 2009) and social presence (Westerman et al., 2015). Exemplification effects may also differ by group affiliation (Arpan, 2009), exemplar vividness (Tran, 2012) and by framing a message as either positive or negative (Yu et al., 2010). The current research suggests that exemplification effects also vary depending on exemplar source.

Research question five was proposed to discover potential differences in intentions to volunteer time, money, storm condition data, or storm damage data, in relation to organization type. Results indicated no significant differences in intentions to volunteer time or money depending on organization type, disaster stage, or interaction

thereof. However, there were significant interaction effects between organization type and crisis stage on intentions to volunteer storm condition data and storm damage data. Participants were significantly more likely to share geographic information about current storm conditions with an emergent citizen group during the crisis stage than in the post-crisis stage. Similarly, participants were more likely to volunteer geographic storm damage information to an emergent citizen organization during the crisis stage than the post-crisis stage. Depending on the type of disaster, there may not be much information to share about storm conditions in the post-crisis stage – the disaster may be completely past. Nevertheless, it is important to know that there are times in which a crisis may appear to be over but where the situation actually hides a lingering threat such as more unpredicted weather, domino effects of emergency situations, or various technological disasters with dubious predictability such as a levee break or nuclear disaster. At these times, crisis managers should note that citizens may be much less likely to share storm related conditions because of the perception that the threat has passed. Another reason for decreased intentions to volunteer information after a disaster may exist is because an emergent citizen group may lose significance in the post-crisis stage of a disaster. An emergent volunteer group is likely more important during the disaster that sparked the organization formation and may therefore decrease in perceived importance in the post-crisis phase of a disaster where longer established and better funded organizations are likely to gain in prominence. Relatedly, participants were more likely to share geographic storm data with a government organization during the post-crisis stage than during the crisis stage.

Limitations and Future Directions

Differences in trust did vary depending on organization type but did not significantly differ depending on crisis stage and there was no interaction effect between crisis stage and organization type. However, looking closer at the means generally showed a pattern where trust was higher in the crisis stage than the pre-crisis or post-crisis stage. Future research may want to give this further examination. Having higher trust during a “crisis” stage makes sense in that there is actually a confirmed threat, whereas, determining actual risk for a hurricane during the pre-crisis stage is somewhat a matter of guesswork and the need to trust an organization after a threat has passed is not as immediately relevant. Knowing when trust is highest may be important when soliciting volunteer information and trying education the public.

Research should seek to discover how trusted a retweeted message from an emergent citizen group would be if included on a government social media feed as opposed to the same message on the emergent citizen group feed only. Furthermore, research could seek to understand how trusted a volunteer citizen group becomes if it is acknowledged by an established organization such as news media or government groups, and, how long it takes to develop that trust.

As previously mentioned, a variety of cues in social media (Sundar et al., 2007) are used when assessing credibility. Strong effort was made to keep manipulations as similar as possible when differentiating between the citizen group and the government organization. However, it is difficult to ascertain which aspects of the manipulation influenced results more than other aspects. The descriptions of the organizations, the emblematic differences between the emergent citizen organization and the government

organization symbols, or even the name of the emergent citizen group could have influenced results. Nevertheless, emergent citizen groups in general, because of their instantaneously “emergent” nature, will likely vary significantly in these respects.

Also, the potential exists that stronger exemplification effects from certain organizations may translate into higher intentions to seek information and take self-protective action. Because the organization with higher trust had stronger exemplification effects, researchers should seek to discover if similar circumstances might lead to higher intentions to seek information and protect oneself from danger as well.

The government organization used for this research study was FEMA. A recent poll found that 79% of Americans thought the government was doing a good job responding to natural disasters (Pew, 2015). Other organizations may have yielded different results because of lack of familiarity or various perceptions of organizational trustworthiness. And, FEMA may have been less trustworthy by participants if they had recently botched a major disaster response. Furthermore, Storm Watch Randy was a completely unfamiliar emergent volunteer citizen group (as would all be all emergent citizen groups unless they were part of a broader citizen volunteer network or were recently formed in a previous disaster). An emergent citizen group that had a slightly longer tenure in disaster response, as in they may have helped out in a previous local storm, could potentially establish higher levels of trust. Similarly, if the stimulus, a hurricane, had been different, perceptions may have changed as well. Future research could test for organizational trust differences between various disasters. Finally, geographically diverse disasters may carry different levels of trust.

Practical Implications

Multiple community storytellers have the ability to share important information with the larger public in times of crisis. And, communication flow has been reshaped because of new communication networks (Friedland et al., 2006). Location specific information can be obtained and shared easily (Palen et al., 2007). Social media “provides both an opportunity and mechanism for members of the public to participate in crisis discussion” (Lin et al., 2016, p. 604). Therefore, the value of citizen participation in emergencies should not be underestimated.

FEMA currently has a feature on their mobile app called “Disaster Reporter.” Disaster Reporter was created in order to “crowdsource and share disaster-related information for events occurring within the United States, allowing citizens, first responders, emergency managers, community response & recovery teams, and others to view and contribute information on a publicly accessible map” (FEMA, 2018, n.p.). At the time of this writing, 3708 images had been shared with the large majority coming from Texas, Florida, and Puerto Rico. Citizens should be encouraged to use resources such as Disaster Reporter during times of extreme weather events or other major disasters. Additionally, government organizations such as FEMA may want to post links to legitimately verified emergent citizen group websites that are geographically related to current disasters and subsequent images so that locals can find important information.

CIT suggests that residents, community organizations, and the media all have a role to play in civic action (Kim & Ball-Rokeach, 2006). Appropriately incorporating broad government structures and media systems, more geographically centered local organizations, and residents on the ground, should be a primary goal of crisis response

communicators. Crisis communicators should point those who need information to other relevant social media accounts (Rice & Spence, 2016). Understanding how these resources connect communicatively is essential when mobilizing participation (Tambini, 1999).

Emergent citizen groups, because of lower perceptions of trust may be able to “borrow” trust by including on their websites information supplied by government organizations. For example, FEMA approved images from www.fema.gov/disaster-reporter, can be pulled down by emergent citizen groups to be incorporated into their own applications or maps (Homeland Security, 2014). Having government approved images may allow emergent citizen groups to be perceived as having higher levels of trustworthiness and also have some extra data from larger organizations. All potential sources of disaster information should be considered during life threatening situations.

Chen et al. (2012) report that pre-existing connections are the best starting point for local storytelling system solidification. Therefore, having solid connections with other related organizations before a crisis is the best time to coordinate information pathways. Because the current study indicates that trust is lower for emergent citizen groups than more established and recognizable government organizations, and because large government organizations may lack local information sources, organizations should work together before a crisis to create connections. This may seem difficult in the case of emergent citizen groups and is therefore even more important to coordinate. Government organizations need to find a way to welcome and verify information from outside emergent groups who can get details that are inaccessible any other way. Data from social media “if integrated or combined with other information channels, can enhance

general situational awareness; provide context to traditional channels; and serve as a means to verify, follow up on, and counteract information provided to and from the public and the field” (Homeland Security, 2014, p. 21).

Government and local emergent organizations could create a virtual network that would supply vital information sharing pathways during a crisis. And government organizations need to be willing to promote verified citizen-led websites (Palen & Liu, 2007). Procopio and Procopio (2007) suggest that virtual networks allow for weak ties to strengthen in emergency situations. An online registry could be created as soon as a potential threat is identified. This registry would need to be promoted by the more established and trusted organization. Then volunteer organizations could join that registry and get verified by the government or other trusted local organizations before the crisis stage occurs. Because those who assess the risk have the ability to share vital knowledge (McComas, 2010), emergent citizen groups should not be ignored.

Disasters often create situations where local citizens band together voluntarily (Stallings & Quarantelli, 1985). Because trust boosts the potential of community cooperation (Putnam, 1993), and because emergent citizen groups appear to be less trusted in the current research study, emergent citizen organizations may want to find a way to either grow their credibility as fast as possible or connect with an already formed organization that has already established adequate trustworthiness. Trust can be groomed (Palanchar & Heath, 2007) and can be built through shared risk management (McComas, 2010), and is vital when promoting disaster evacuation (Rod et al., 2012). Furthermore, mistrust should not be taken lightly (Aldoory, 2009).

Additionally, because trust can be affected by complexities related to information and source verification (Dahlberg, 2001), networked organizations need to work quickly to help verify and acknowledge relevant information. During crises involving concentrated populations, certain messages are likely to be repeatedly posted on social media. These postings should be monitored and may be a source of corroboration for information supplied by emergent citizen organizations.

The enhanced user-friendliness of technological devices (Tambini, 1999) should be promoted in order to increase the information gathering capabilities of crisis organizations. Also, grassroots organizations can supply information inaccessible to broader organizations (Chen et al., 2012). The current research suggests that participants were more likely to volunteer storm damage at various disaster stages. However, crisis managers should not resist the urge to solicit valuable information during a crisis from local citizens. Encouraging information sharing is probably more likely in current times because of increased ease of use and the ubiquity of mobile devices in many communities.

Furthermore, because exemplification effects were greater for the government organization, the chances that information seeking and self-protection may theoretically be increased if exemplars are supplied by the same organization rather than an emergent volunteer citizen group. This will have to be tested in the future, but Zillmann (2006) reports that exemplification theory is useful because it explains the potential of exemplars to influence self-protection and related information seeking.

People often want to find a way to help during emergencies (McComas, 2010). And, best practices suggest incorporating “the public as a legitimate and equal partner”

(Seeger, 2006) in crisis response. The current study suggests that intentions to volunteer storm data when viewing disaster information on social media are different depending on the organization running in the social media feed. Intentions to volunteer geographic storm condition, and storm damage, data were lower towards emergent citizen groups in the post-crisis stage than in the crisis stage. However, these organizations may want to continue to gather pertinent information after the threat is perceived to be gone. If emergent citizen groups want additional information after a crisis is perceived to have passed, they may need to expend additional effort in soliciting the desired information. Conversely, the government organization in the current study was more likely to receive volunteer storm damage data in the post-crisis stage than in the crisis stage. Therefore, government organizations may need to put more effort into soliciting information about storm related damage sharing during the crisis stage than in the post-crisis stage. Citizens may feel as if government organizations have all the resources they need during the middle of a disaster – but that is actually the time that the government organization needs relevant information the most. Government organizations should, therefore, encourage appropriate information sharing as early in the crisis as possible.

Chapter Summary

This chapter included a discussion of significant findings from the current research project concerning exemplification effects, perceptions of trust, and intentions to volunteer depending on disaster stage and organizational type. Perceptions of trust were higher for a government organization than an emergent citizen organization. Perceptions of hurricane severity were also higher when exemplars were supplied by a government organization than when supplied by an emergent citizen group. Intentions to volunteer

geographic data about storm damage and storm conditions varied when observing interaction effects between organizational type and disaster stage. Furthermore, study limitations and future research directions were offered for communication researchers along with practical advice for crisis managers.

CHAPTER 6: CONCLUSION

Literature regarding exemplification theory, communication infrastructure theory, social capital, disaster stages, citizen journalism and emergent citizen groups, provide important insights into the creation and flow of disaster information in the social media age. The current research provides evidence that exemplification effects differ depending on information source, certain organizations yield higher levels of trust on social media, and intentions to volunteer storm information to different organizations can vary throughout the stages of a natural disaster.

Study one proposed research questions regarding potential differences in exemplification effects throughout disaster stages. The presence or absence of an exemplar did not significantly influence perceptions of severity of a tornado. And, no significant differences in perceptions of severity were found throughout the various disaster stages. The purpose of study two was to discover potential differences in exemplification effects, levels of trust, and intentions to volunteer, depending on disaster stage and organizational type. The findings of study two extend previous exemplification theory research that show multiple variables can moderate exemplification effects. Data from the current study indicate that exemplars supplied by a government organization produce higher perceptions of severity than exemplars supplied by an emergent citizen organization. Furthermore, the government organization was perceived as more trustworthy than the emergent citizen organization. These findings about differences in perceptions of trust and exemplification effects are significant to understand in the digital age where citizens sometimes form emergency response groups in online environments to help others during natural disasters.

Findings from study two also indicated that people are more likely to volunteer storm condition and storm damage data during some disaster stage than others. Because the internet allows easy information sharing (Chung, 2011), the ability to publish and engage (Houston et al., 2015), and affords democratic participation (Lin, 1999), crisis managers should not neglect to encourage citizens to share important information throughout the lifecycle of a disaster. Furthermore, emergency managers for all organizations should study best practices for sharing information in times of crisis.

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Curriculum Vitae

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Education

- MA Communication, 2012** *Western Michigan University, Kalamazoo, MI*
-Advisor: Dr. Patric Spence
- BA Communication, 2006** *Andrews University, Berrien Springs, MI*
-Minor: Engineering Technology
- Certificate III in Outdoor Recreation, 2003** *Avondale College (NSW, Australia)*

Professional Positions

- University of Pikeville (Pikeville, KY)** **Fall 2017-Spring 2018**
Division of Social Sciences
-Visiting Assistant Professor of Communication
- University of Kentucky (Lexington, KY)** **Fall 2014-Spring 2017**
College of Communication and Information
- Instructor/Graduate Teaching Assistant
-Assistant Course Coordinator (CIS 112)
- PresentationU at the College of Engineering Elbert C. Ray eStudio** **Fall 2016-Spring 2017**
-Teaching Assistant
- Southwestern Michigan College (Dowagiac, MI)** **Fall 2013-Summer 2014**
Communications Department
-Adjunct Faculty
- Andrews University** **Fall 2013-Spring 2014**
Department of Communication
-Contract Faculty
- Western Michigan University** **Fall 2010-Spring 2012**
School of Communication
-Graduate Teaching Assistant/Instructor
- Lake Michigan College** **Fall 2009-Summer I 2011**
Department of English and Communication
-Adjunct Faculty
- Andrews University** **Fall 2008-Spring 2009**
Department of Communication

-Contract Faculty

Honors/Awards

- Risk/Crisis Research Fellow, College of Communication and Information, University of Kentucky, 2017
- Em Griffin Top Paper Award, Central States Communication Association; Communication Theory Interest Group; Rice, R. G., Westerman, D., K. & Spence, P. R.; 2017
- Top Paper Award, Central States Communication Association; Public Relations Division: Lachlan, K. A., Spence, P. R., Omilion-Hodges, L. & Rice, R.; 2017
- Instructional Communication and Research (ICR) Professional Development Series Certificate: College of Communication and Information, University of Kentucky, 2017
- Graduate Student Faculty Fellow (2016). Presentation U! – University of Kentucky
- Summer Doctoral Seminar (2016). Agendamelding: How we use Traditional and Social Media to Connect Community. Wayne State University. Presented by Dr. Donald Shaw.
- Dan Millar Top Research Paper in Public Relations, Central States Communication Association: Rice, R. G. (2016).
- Top Paper Award, Central States Communication Association; Public Relations Division: Lachlan, K. A., Spence, P. R., Omilion-Hodges, L. & Rice, R. (2013)
- Graduate Teaching Assistantship, University of Kentucky
- Graduate Teaching Assistantship, Western Michigan University
- USAA Collegiate Communications Award, Andrews University
- USAA Collegiate All-American Scholar, Andrews University
- Who's Who Among Students in American Universities and Colleges, Andrews University
- E. L. Vogal Vale Scholarship, Andrews University
- Lambi Pi Eta Member, Andrews University

Professional Publications

Peer-Reviewed Publications

Spence, P. R., Lin, X., Lachlan, K. A., Westerman, D. K., Sellnow, T., Rice, R. G., & Seeger, H. (accepted) Let me respond: Exemplification effects, user comments and responses to a news story. *Western Journal of Communication*.

Lachlan, K. A., Spence, P. R., Omilion-Hodges, L. & Rice, R. G., & Brink, A. (2018). Responding to campus shootings: Two studies exploring the effects of sex and placement strategy on knowledge acquisition and organizational reputation. *Journal of International Crisis and Risk Communication Research*, 1(1), 83-110. doi: 10.30658/jicrcr.1.1.5

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Rice, R. G., & Spence, P. R. (2016). Thor visits Lexington: Exploration of the knowledge-sharing gap and risk management learning in social media during multiple winter storms. *Journal of Computers in Human Behavior*, 65, 612-618. doi: 10.1016/j.chb.2016.05.088

Edited Book Chapters

Lin, X., Xu, Z., Rainer, A., Rice, R., Spence, P. R., & Lachlan, K. A. (2017). Research in crises, data collection suggestions and practices. In Eiras, J. R. (Ed.), *Data Collection: Methods, Ethical Issues and Future Directions* (pp. 49-64). Hauppauge, NY: Nova Publishers.

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