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Emergency Text Messaging Systems and Higher Education Campuses: Expanding Crisis Communication Theories and Best Practices

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I am submitting herewith a thesis written by Tanya Desselle Ickowitz entitled "Emergency Text Messaging Systems and Higher Education Campuses: Expanding Crisis Communication Theories and Best Practices." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Communication and Information.

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Emergency Text Messaging Systems and Higher Education Campuses:
Expanding Crisis Communication Theories and Best Practices

A Thesis Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Tanya Desselle Ickowitz

May 2012

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ABSTRACT

Recent public safety threats affecting college and university campuses during episodes of natural disasters and mass violence have exposed numerous challenges and opportunities in crisis and risk communication. The evacuation of college campuses during natural disasters such as Hurricane Katrina in 2005 and episodes of mass violence such as the shootings at the University of Alabama-Huntsville in 2010, among others, have revealed how even the most well-developed campus communication plans leave room for improvement during actual crisis events (Catullo, Walker, & Floyd, 2009). Through in-depth interviews (N=10) of crisis communication managers at U. S. colleges and universities, as well as document reviews of media coverage (N=36) of the events surrounding previous natural and manmade campus emergencies, the purpose of this paper is to examine how colleges and universities have integrated a relatively new communication technology, emergency text messaging, into their planned crisis communication response to disseminate emergency information to stakeholders, such as students, faculty, staff, and parents, during crises affecting their campuses. Through grounded theory, data systematically obtained and analyzed offer: (1) a running theoretical discussion using conceptual categories and their properties related to crisis communication adaptations of existing theories and models, including chaos theory, power, theory, and complexity theory, and (2) additional best practices for integrating emergency text messaging with other communication channels that can be applied in a university setting to increase the likelihood of a successful emergency response.

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CHAPTER I

INTRODUCTION AND GENERAL INFORMATION

Recent public safety threats affecting college and university campuses during episodes of natural disasters and mass violence have exposed numerous challenges and opportunities in risk and crisis communication. The evacuation of college campuses during natural disasters such as Hurricane Katrina and the 2007 California wildfires, and episodes of mass violence such as the recent shootings at Virginia Tech, Northern Illinois University, and the University of Alabama Huntsville, among others, have revealed how even the most well-developed campus communication plans leave room for improvement during actual crisis events (Catullo, Walker, & Floyd, 2009). While emergency response teams such as public safety, law enforcement, and medical personnel seek to control crisis situations within defined and immediate perimeters, public relations professionals speak to a broad audience by sharing critical information with publics in an effort to reduce chaos and mitigate additional harm.

Contemporary fundamental definitions of public relations stress the interdependence between organizations, describing the profession as managed communication that can constrain or enhance the mission of the organization (Grunig & Grunig, 1991). The value of public relations is demonstrated during times of organizational crisis, when communicators are in a unique position to not only act for the benefit of the organization but also for the health and safety of its stakeholders (Coombs, 2007). In recent years, the importance of a well-developed crisis communication plan has increasingly become more recognized as an essential part of organizations' larger issues management and response strategies (Heath & Palenchar, 2008). While day-to-day operations under normal circumstances set the foundation for organizational

prosperity, ultimately the future success of organizations may be defined by the achievements and failures of management, including communication practitioners, during times of crisis.

The purpose of this study is to examine how colleges and universities have integrated a relatively new communication technology, emergency text messaging, into their planned crisis communication response to natural and manmade disasters. This study, grounded in crisis, risk, and emergency management theory (e.g., Cho & Gower, 2006; Coombs, 2007; Mitroff & Aganos, 2000) addressed how colleges and universities have incorporated emergency text messaging systems into their crisis communication plans; how these institutions have tested such emergency notification systems; what, if any, prevalent gaps exist between audience expectations and actual practices; and what are the perceived strengths and weaknesses of using text messages to communicate with campus communities during times of crisis.

Grounded theory has been acknowledged by numerous scholars (e.g., Charmaz, 2006; Denzin & Lincoln, 2005; Lincoln & Guba, 1985; McCracken, 1988) as a useful means of exploring new lines of research, and it served as an appropriate method for collecting qualitative data to generate research-based substantive theory applicable to practitioners of crisis communication on campuses while also discovering phenomena worthy of future scholarly exploration. The data collected in this study through in-depth phone interviews (N=10) of public relations practitioners, as well as a document analysis of media coverage of campus crises (N=36), offered a humanistic and constructivist perspective about circumstances related to emergency text message alert systems that few researchers to date have explored.

The tragic events that occurred on the Virginia Tech campus on April 16, 2007 thrust the subject of crisis communication at institutions of higher education into the limelight, and the administration's response has become a benchmark to which subsequent campus emergency

management is now often compared. In the spring of 2007, most campuses either did not have or, as in the case of Virginia Tech, were in the process of requesting proposals to put emergency text messaging systems in place for broadcasting crisis-related information. Although a myriad of facets to the university's emergency response as a whole were analyzed and criticized (Virginia Tech Review Panel, 2007), the public discourse following the event largely focused on questioning whether emergency text notifications could have prevented or mitigated the number of casualties suffered on that day.

As a result, in the months immediately following the Virginia Tech crisis, campus administrators across the United States hastily contracted third party service providers to include emergency text messaging in their crisis communication strategies (Foster, 2007; Hoover & Lipka, 2007). Since the mass influx of campuses adding text message notifications systems to their communication plans began, events, including a subsequent false alarm at Virginia Tech (Young, 2008), have occurred at several campuses nationwide in which the technology either did not behave as the third party service providers claimed or failed to provide information in a manner expected by the intended audience (Keller, 2011; Traynor, 2008; Young, 2007, 2010).

While the technology and infrastructure currently in place to support mass notification via text messaging has improved greatly since its introduction onto college campuses in the mid-2000s, crisis communication and emergency management professionals continue to learn more about this technology as they confront new situations and analyze their experiences. Many of the individuals interviewed in this study shared similar experiences and perceptions regarding the use of text messaging in various campus crises, yet their unique perspectives illustrated how effective crisis communication does not result from a one-size-fits-all approach.

The conclusions resulting from this study contain both practical and theoretical implications for public relations practitioners and scholars. From a theoretical perspective, the research conducted in this study adds to the growing assertion by public relations scholars (Avery, Lariscy, Kim, & Hocke, 2010; Gilpin & Murphy, 2010; Sellnow, Seeger, & Ulmer, 2002) that the larger body of crisis communication theory, in its focus on crisis planning and image restoration, is lacking in the area of real-time crisis response. From a practical perspective, the data collected in this study provides help and insight to institutions of higher education as they evaluate communication response plans for the myriad of potential crises that may occur on campus. While one of the two goals of this study was to offer best practices that can be applied in a university setting to increase the likelihood of a successful emergency response, analysis of the data also revealed that chaos theory, complexity theory, and power theory provide significant insight in an area of crisis communication literature that is virtually devoid of substantial research.

CHAPTER II

LITERATURE REVIEW

Defining Public Relations

Some of the earliest attempts to define public relations date back to the early 1900's and document the shift from propaganda and persuasion to building goodwill through communication (Hutton, 1999). Public relations pioneers such as Edward Bernays, who is referred to in his 1995 obituary as the "father of public relations" (The New York Times, para. 1), and Rex Harlow, founder of the public relations department at Stanford University, recognized the potential of public relations to develop into a viable profession worthy of its own professional organizations, code of ethics, and academic tracts (Bernays, 1978; Harlow, 1980). For the purpose of this study, however, emphasis will primarily be placed on contemporary scholarship extending from the latter part of the 20th century to the present, which more or less coincides with the fact that academic study of public relations is less than 40 years old (Taylor, 2010).

Public relations scholars face difficulty in finding agreement upon the scope of the field's practices, as many of its functions overlap with other areas dependent upon communication. Current attempts to define public relations have succeeded more in providing inclusive parameters rather than establishing exclusive boundaries. As the scope of what practices distinguish public relations from other communication functions as a profession remains unclear, so does the ability to come to a consensus on a single definition of the term (Broom, Casey, & Ritchey, 1997; Gower, 2006; Hutton, 1999).

Within this challenge of defining the discipline, Karlberg (1996) noted that various segments of the population, including individual citizens, community groups, and movements, promote their own interests through public relations devices. Since other entities frequently employ public relations tactics as part of their operating strategies, the field is often associated with the misuse of its application in other disciplines.

Chaffee and Metzger (2001) observed that within the whole of communication, personal perspectives cause definitive meaning for even the most primitive terms to vary among individuals. Differing rationales in the literature demonstrate indecisiveness regarding whether to include both external and internal stakeholders (Kim, 2007), to what extent it differs on the global stage (Gower, 2006; Grunig, 2006), or how to consistently develop sound theory that is relevant and useful in an applied setting (Broom, et al., 1997). Applied elements are certainly present in the literature, but research shows that marketing and public relations are often confused with one another because each discipline's theories are so easily exchanged (Grunig & Grunig, 1991). Bernays (1978) noted that as recently as the 1970's, scholarly pursuits of the public relations field focused more on writing skills than its ties to the social sciences.

Scholars have accused most attempts to define public relations of being incapable of identifying or substantially developing a core concept and failing to recognize the practice beyond organizations by ignoring the individual and informal group applications of public relations (Heath, 2006; Hutton, 1999). Hutton maintained that the increase in industry terms related to image, perception, and management, which were intended to identify sub-disciplines within public relations, stood to derail the progress being made within the field by diluting a unified concept. By contrast, Botan and Taylor (2004) commended public relations professionals for developing more specialized journals and associations than any other subset of

communication, but they criticized researchers for failing to submit their work outside their own journals, thereby perpetuating the lack of understanding of and appreciation for the field.

Heath (2006) described public relations as “ a force (through reflective research and best practices) to foster community as blended relationships, resource distribution, and shared meanings that advance and yield to enlightened choice” (p. 97). Grunig, however, is often credited with developing a contemporary fundamental definition of public relations, which stressed the interdependence between organizations and publics when describing public relations as managed communication that can constrain or enhance the mission of the organization (Grunig & Grunig, 1991). Similarly, one of the most frequently cited definitions slightly adjusted Grunig’s concept to include “the management function that establishes and maintains mutually beneficial relationships between an organization and the publics on whom its success or failure depends” (Cutlip, Center, & Broom, 1994, p. 6).

Many commonly accepted attempts to define the field do so in terms of techniques and results. Coombs and Holladay (2007) pointed out that some definitions focus narrowly on outcomes such as the amount of media coverage or brand awareness that is generated, and they critiqued the inadequacy of reducing public relations to publicity. Drawing from Max Weber, Waeraas (2007) extended the definition beyond processes and outcomes to include acquiring and protecting organizational legitimacy. Legitimacy results from sound decision-making that complies with boundaries based on the perceived social filters (Holmstrom, 2005) and has been identified as the core contribution of public relations, which allows the techniques used to foster good relationships with the public to take place (Waeraas, 2007).

In his introduction to *The SAGE Handbook of Public Relations*, Heath (2010) summarized the major areas of research within public relations, including: (1) a traditional focus

on journalism and media relations, (2) a communication studies orientation that features concepts such as meaning, discourse, dialogue, rhetoric and persuasion, with the resulting advocacy, interpretation, social construction and shared meaning view of communication; (3) a relationship management approach drawing from interpersonal communication literature; and (4) a more recent major advance of the field shifting from making organizations effective to making society effective.

Public relations scholars have succeeded in producing significant theoretical contributions to the academic community that can be applied by public relations practitioners in a professional setting. In particular, practitioners continually strive to gain a better understanding of how their intended audiences assimilate messages so that they can predict and influence potential reactions. Heath (2000) asserted that the mutually beneficial relationships so often discussed in public relations literature are predicated upon concurrence generated by a dialogic process that aims for continual improvement. He argued that public relations directly benefits the marketplace of ideas by repeatedly affirming and contesting propositions, thus enlightening society with a wealth of new perspectives.

In contrast, numerous scholars have also argued that because public relations has no formal licensure, anyone can claim to represent the field, which often leads to the questionable and unethical practices with which the discipline inevitably becomes associated (Bernays, 1978; Olasky, 1989). Hutton (1999) stated that while public relations scholars have struggled to define the field, outside critics have been quick to fill the void with negative terms. Coombs and Holladay (2007) echoed this sentiment, accusing the media of repeatedly misusing the term public relations to imply unethical organizational practices, and the lack of focus on the

industry's efforts to act in the public's best interest rather than its own leaves the public to form a negative impression.

Within public relations, one of the most studied functions of the practice is crisis communication. According to Avery, et al. (2010), "few topics have been so fully embraced within public relations as crises" (p. 190). Effective crisis communication simultaneously protects both the organization and its constituents by relaying critical information to stakeholders about existing and potential threats before, during, and after crisis events. Gilpin and Murphy (2010) acknowledged that where the early roots of crisis communication placed an asymmetric focus on the needs of the organization, contemporary approaches acknowledge the importance of planning for crises with its publics in mind. By embracing fundamental modern public relations tenets of providing open and transparent communication to convey reasonable expectations and outcomes (Coombs, 2006; Gonzalez-Herrero & Smith, 2008; Heath & Palenchar, 2008; Pauly & Hutchison, 2005), public relations practitioners demonstrate the value of the field within organizations during a crisis in maintaining and restoring order, promoting public safety, and generating trust among stakeholders.

Defining Crisis

Much debate surrounds the process of developing a single definition of crisis because of its very nature of posing a constant state of flux (Jaques, 2009). For the purpose of this review, Coombs' (2007) assertion works well within the context of communication-based applications of the term. He stated that a crisis is "the perception of an unpredictable event that threatens important expectancies of stakeholders and can seriously impact an organization's performance and generate negative outcomes" (pp. 2-3). Although some crises present themselves in an obvious fashion, others of a more subtle nature are detected only after unintentionally uncovering

data that may not even unanimously be classified as crises. Referring to the unique public sphere created through highly visible user-driven technologies such as social media, Coombs and Holladay (2011) used the term *paracrisis* to classify potential threats imposed on organizations by dissatisfied stakeholders that, if left unaddressed, could escalate from being potential threats to actual crises. Seeger (2002) advised that several small events, such as communication oversights, ignoring warning signs, failure to accurately receive and interpret messages, and strained processing capacity can all accumulate over time and develop into a crisis situation that is more difficult to recognize.

With a topic as broad as crisis, other scholars have also weighed in to cultivate a meaningful assessment of what constitutes a “true” crisis. Using chaos theory as a basis for his work, Seeger (2002) suggested that crisis is characterized by the ordered/disordered nature of systems and the struggle between predictability and disorder. Griese (2001) distinguished true crises from routine annoyances by classifying them as rare events that pose a severe threat to an organization’s survival.

Coombs’ (2007) distinction of the perception of an event from the actual event itself is particularly significant because of the tendency for many organizations to fail to acknowledge the true impact of public opinion if not tied to a tangible, legitimate incident. He explained that stakeholders’ behavior is directly related to their belief that the organization is in crisis, and their reactions thereby make even the perception of a crisis a reality. Due to the heavy media saturation present in recent society, especially in light of new technology, according to Cho and Gower (2006), the public often forms its impression of an event based on the framework established through communication channels employed by the media more than the facts of the event itself.

Crisis Management and Communication

Stemming from its roots in emergency preparedness, crisis management refers to the actions taken by an organization during times of crisis in an effort to minimize the negative effects upon the organization itself, as well as stakeholders and the larger industry (Coombs, 2007). It involves planning applicable and appropriate responses to a given crisis situation (Cho & Gower, 2006). Mitroff and Aganos (2000) distinguished crisis management from emergency and risk management by stating that the latter often deals with natural disasters, while crisis management typically addresses preventable, man-made crises.

Proper crisis planning and management simultaneously benefit both an organization's human and financial interests. Coombs (2007) pointed out that on a human level, expedient crisis prevention and response protects lives, health, and the environment, while fiscally, it also decreases revenue loss, facilitates reputation management, saves money and time spent addressing a crisis, and might also earn credit for improving industry policies and standards. Seeger (2002) warned that the more complex and externally-interdependent an organization is, the more prone it is to experiencing a crisis event.

The implications of proper crisis response and communication are profound, and Waymer and Heath (2007) described how the organization's legitimacy is at stake when the public perceives that the level of response is not congruent with its responsibility for the event taking place. Their analysis of existing literature concluded that crisis communication is a tool employed by organizations to better control how the crisis events are framed (Hearit, 1994; Waymer & Heath, 2007). Responsible crisis communication entails an organization's practice during times of crisis of releasing thorough, accurate, and timely information to the media and

concerned publics (Greer & Moreland, 2003), and especially those who potentially or are bearing the risk.

History and Evolution

While its earliest formal roots can be traced to the 1970's (Coombs, 2007; Palenchar, 2008), many scholars attribute the birth of crisis communication in its current form to multiple crises that took place in the 1980's, such as the Union Carbide plant accident in Bhopal, India (Palenchar, 2008) and the successful management of the 1982 Tylenol tampering incident as compared to the management failures witnessed during the 1989 Exxon Valdez Alaskan oil spill (Mitroff & Aganos, 2000; Pauly & Hutchison, 2005). In these iconic cases, Pauly and Hutchison (2005) asserted that Johnson and Johnson's handling of the Tylenol crisis featured best practices in public relations in that its communication efforts were transparent, forthcoming, and genuinely designed with the safety of its consumers at heart. In contrast, Exxon management represented worst practices when it failed to address the public, denied responsibility, and waited four years to appoint a communication manager. Such events launched a growing philosophy regarding community right-to-know (Palenchar, 2009) that have become the benchmarks upon which future crisis management teams are judged.

Since the field remains relatively new, emerging trends in crisis communication offer additional insight beyond reactionary response strategies. Much of the traditional focus of crisis communication relates achieving short-term goals that result in a fast resolution with minimal damage. Waymer and Heath (2002) argued that current crisis communication literature focuses primarily on the managerial perspective, essentially providing a manual for surviving the crisis, escaping legal and punitive sanctions, and mitigating public outrage. However, crisis communication is becoming increasingly more important in the long-term process of restoring

the organization to precrisis status or better (Seeger, 2002). Ulmer, Sellnow and Seeger's (2007) work on discourse renewal demonstrates the value of long-term analysis of crisis communication management and research and its value to society. Crisis communication renewal is seen as an "optimistic discourse that emphasizes moving beyond the crisis, focusing on strong value positions, responsibility to stakeholders, and the growth as a results of the crisis" (Ulmer & Sellnow, 2002, p. 362). Furthermore, crisis communication is gradually shifting from being strategy-based to a more theory-oriented discipline (Shrivastava, 1993; Williams & Olaniran, 1998), particularly in areas that examine the stakeholder mindset (Coombs, 2006; Kim, et al., 2009; Waymer & Heath, 2007).

Given that the history of crisis communication now spans several decades, one cannot ignore the role that the introduction of the Internet has played in the evolution of crisis plans. Not only has the Internet become one of the most popular forms of communication among organizations and its stakeholders, but it has also provided a new platform upon which stakeholders communicate information about an organization to one another (Gonzalez-Herrero & Smith, 2008). Because of the immediacy of information now possible, although similar crises would most likely occur regardless, the Internet accelerates the crisis and the process of disseminating crisis-related information by breaking geographic boundaries. A more detailed discussion of the role of new media technology and crisis communication is featured later in this chapter.

Crisis communication differs from crisis management in that it relates specifically to tactics and strategies employed to disburse messages on behalf of an organization in response to a crisis rather than the actual methods enacted by the organization to remedy the crisis at hand. The essential tenets of crisis communication mandate that the concerned publics receive

messages that deliver what they want to know and what they can do to empower themselves to gain some degree of control of their situation, as well as what efforts the organization is making to correct the problem (Coombs, 2006; Heath & Palenchar, 2008).

Crisis Planning

Predicting and planning for every possible source of crisis that could occur within an organization would pose a nearly unattainable goal for even the most well-funded and expertly-skilled management teams (Palenchar, 2009; Seeger, 2002; Tyler, 2005). When considering events for which an organization should prepare, many scholars (e.g. Coombs, 2007; Mitroff & Aganos, 2000; Palenchar, 2009) agree that those crises with the largest impact and highest likelihood of occurrence warrant the most comprehensive deliberation. Naturally, some events are more likely to occur than others depending on the scope of practice and the geographic location of the organization involved.

Drawing from a variety of existing scholarly crisis literature, Coombs (2007) compiled a concise list categorizing the most common forms of crisis to assist organizations in forming plans to sustain or resume operations surrounding scandals or catastrophes. He classified most crises as deriving from negligent, intentional, accidental, or naturally-occurring events, including natural disasters, workplace violence, rumors, malevolence, challenges, technical-error accidents, technical-error product harm, human-error product harm, human-error accidents and organizational misdeeds (p. 65). Heath and Palenchar (2008) expanded these concepts to include how acts of terrorism and intentionality present a dilemma when assigning a locus of responsibility based on the organization's reasonable abilities to prevent various disasters from occurring.

Response Strategies

Whether an organization chooses to formally acknowledge a crisis or not, if stakeholders perceive it to be in crisis, then both active and passive responses (or non-responses) are viewed as part of the response strategy. According to Coombs (2007), the organization can choose to employ an offensive or defensive stance to explain the cause of the crisis in order to salvage its reputation. Two major research lines in crisis communication and public relations related to response strategies are image restoration theory and Situational Crisis Communication Theory (SCCT).

In a 1995 study, Coombs developed SCCT to provide a guideline for selecting a response strategy based on the crisis type. A matrix of clusters emerged from this study to include response options in which the organization denies, diminishes, or deals with the scope of blame based upon whether the reason for the crisis falls under a victim, accidental, or preventable classification. Drawing from a variety of existing scholarly crisis literature, Coombs (2007) compiled a concise list categorizing the most common forms of crisis to assist organizations in forming plans to sustain or resume operations surrounding scandals or catastrophes. He classified most crises as deriving from negligent, intentional, accidental, or naturally occurring events, including natural disasters, workplace violence, rumors, malevolence, challenges, technical-error accidents, technical-error product harm, human-error product harm, human-error accidents, and organizational misdeeds. He pointed out that on a human level, expedient crisis prevention and response protects lives, health, and the environment, while fiscally, it also decreases revenue loss, facilitates reputation management, saves money and time spent addressing a crisis and might also earn credit for improving industry policies and standards.

Moving from pre-crisis planning to post-crisis renewal, Benoit (1995) asserted in his image restoration theory that “human beings engage in recurrent patterns of communicative behavior designed to reduce, redress, or avoid damage to their reputation (or face or image) from perceived wrongdoing” (p. vii). He stressed the notion that an audience’s perception of an organization’s behavior is as valid of a factor in a communication response as the facts themselves, which is a concept that can be aptly applied to all phases of crisis communication. Benoit outlined several options from which to choose when responding to a crisis, and based on the public’s perception of where to play culpability, organizations can avoid blame through denial, counter accusations by attacking another party, lessen the blame with an apology, or take action to correct the problem. Though Benoit does not encourage dishonest practices, image restoration theory undoubtedly places emphasis on the organization’s interests with little discussion of the public’s benefit.

One common response strategy that organizations employ is to use stories to frame events in a context that conveys their account of the reality surrounding a situation (Hallahan, 1999). As such, narrative constructs are often useful in an applied setting during times of uncertainty, particularly for the fields of risk and crisis communication. Since risk assessments are often based on complex scientific investigation, narrative descriptions utilize symbolic representations of empirical data to personalize inherent risk in a manner that makes sense to the individual (Heath & Nathan, 1990). If a population fails to understand the extent of the risk or how it relates to them, they are oppressively separated from a legitimate decision making process (Grabill & Simmons, 1998). Through research conducted to study modification of risky behavior, scholars have provided practitioners with empirically substantiated recommendations

regarding positive and negative framing of narratives contingent upon the longevity or nature of a campaign (Hallahan, 1993).

While Coombs' and Benoit's dominant theories provide valuable insight to public relations professionals regarding communication plans that proceed and follow organizational crisis, they offer little assistance in reacting to the situation as an emergency unfolds. A comprehensive review of crisis communication research published from 1991 to 2009 revealed that the disproportionate amount of scholarly work dedicated to these approaches has resulted in practical and theoretical gaps that necessitate increased diversity in future lines of research (Avery, et al., 2010). Based on these observations, the reputation-centric mission and formulaic approach to both theories contributes to unfavorable opinions of the public relations profession.

New Media and Crisis Communication

Existing literature has revealed that the advent of new media technology has introduced a myriad of one-way and two-way communication channels with which organizations release information to and engage in dialogue with stakeholders, the public, and the media (Taylor & Perry, 2005). Although new media has changed the speed, amount, and accuracy of competing messages present in the public relations landscape, it is important to distinguish the fundamental practice of crisis communication from the technology used by its professionals. González-Herrero and Smith (2008) supported this point by noting that Internet-based information often still relies upon mainstream media to popularize the issue among a widespread audience. Taylor and Perry (2005) extended this thought by demonstrating that the majority of organizations continue to employ a mixed-media approach to crisis communication, which helps to ensure that fragmented audiences receive essential information through their preferred retrieval channels. At its best, crisis communication, whether through traditional or new media, places the public's well

being at the forefront of its efforts and is generated with the primary goal of mitigating personal harm rather than bolstering reputation management (Jin, Park, & Len-Rios, 2010).

However efficient it may be in increasing access to crisis-related information among some publics, Web and social media communication also threatens to increase the informational divide between individuals who have not adapted to emerging technology and those who rely upon it to communicate primary messages. Karlberg (1996) warned that symmetry mistakenly “assumes that all segments of the population have the communication skills and resources to represent themselves in the public discourse” (p. 273). His research suggested that additional steps must be taken to ensure that audiences who do not have access to new technology, whether due to lack of availability or unfamiliarity with new media, are not excluded from notifications as traditional information channels become less popular. According to Jones (2002), publics form “communities of shared meaning” that converge not only around common issues, but also common way of communicating (p. 56). In this respect, it is imperative that practitioners resist the tendency to adopt a one-size-fits-all approach in message creation by identifying the unique dynamics that differentiate various publics from one another.

Veil, Buehner, and Palenchar (2011) examined the current literature of social media with best practices in risk and crisis communication in mind to demonstrate how crisis communicators can embrace social media tools to better manage a risk or crisis. While numerous best practices and literature review lists are being developed, their approach includes both theoretical and practical developments and implications. It includes: (1) determine social media engagement as part of the risk and crisis management policies; (2) incorporate social media tools in environmental scanning to listen to risk and crisis bearers’ concerns; (3) engage social media in daily communication activities; (4) join the conversation, including rumor management, and

determine best channels to reach segmented publics; (5) check information for accuracy and respond honestly to questions; (6) follow and share messages with credible sources; (7) recognize the media is already using social media; (8) remember that social media is interpersonal communication; (9) use social media as a primary tool for updates; (10) ask for help and provide direction; and (11) remember that social media is not a communication panacea – it remains a channel despite its technology advancements, rapid access to information, large numbers of stakeholders, low cost, and ease of use. “Thus, using social media is not a best practice in risk and crisis communication. Social media is a tool that can assist practitioners in following the best practices in risk and crisis communication” (p. 120).

Emergency Notification via Text Messaging

Crisis communication plans are created in part in an effort to develop the most efficient means possible to disseminate timely critical alerts and information to populations at risk during a crisis. The use of text messaging emergency notification has emerged as a primary issue in the dialogue surrounding modern crisis communication (Coombs & Holladay, 2009; Gordon, 2007; Naismith, 2007; Shankar, 2008; Vielhaber & Waltman, 2008). For example, some researchers have concluded that several weaknesses exist in using text messaging to deliver emergency notification to community members during crises on college and university campuses (e.g., Traynor, 2008). Among those concerns that have been posed include: short messaging services’ ability to handle increased volume in short time periods, potential to interfere with voice communication, limitations in message length, and delays in message reception. As a result, a number of college campuses and universities are unsure of the extent of potential gaps between the perceived effectiveness of emergency notification systems via text messaging and actual deliverability of crisis-related information.

A preliminary search of existing literature has confirmed that emergency notification via text messaging is an effective means of communicating some crisis-related information on college and university campuses, but it should be used in conjunction with other traditional communication channels to increase message reception (Coombs & Holladay, 2009; Naismith, 2007; Vielhaber & Waltman, 2008). Vielhaber and Waltman (2008) asserted that regardless of the source, stakeholders expect fast, accessible information during a crisis, and new technology can improve the speed and consistency of messages being disbursed. They explained that based on the principles found in Coombs' (2006) SCCT model, the response strategies employed by organizations during a crisis dictate the content of its messages as well as which forms of media are most effective.

Additional literature also provides insightful research regarding message reception among key stakeholders, audience expectations, and the successes, failures, and misunderstandings that have occurred when new media technologies have been used in times of crisis (Coombs & Holladay, 2009; Gordon, 2007; Naismith, 2007). Emergency notification through cellular text messaging (SMS) or multimedia messaging (MMS) has become a reliable, often anticipated, form of disseminating basic, essential information to large numbers of people in a short amount of time (Gordon, 2007). The benefits of computer-based technologies discussed in the previous sections are limited by their dependence upon a reliable and functioning power supply. When this requirement is not met, as is often the case in natural disasters, mobile technology offers a means of sustaining communication with stakeholders for an extended period of time (Shankar, 2008).

With respect to message reception, Naismith (2007) conducted a study among university students and concluded that while text messages serve as the most effective means of ensuring

that information reaches a widespread campus audience, students also preferred to have emails containing duplicate information sent as a backup to ensure receipt. Mobile technology is particularly beneficial when the integrity of a communications infrastructure is compromised due to crisis events. An examination of the 2002 SARS epidemic, 2004 Sumatra-Andaman Tsunami, and the 2005 London bombings by Gordon (2007) revealed that text messaging among victims was more effective than congested landlines or voice calls in locating survivors and circulating critical information. According to Gordon, mobile service providers managed crisis communication efforts better than local authorities through their ability to reserve network access in designated regions for emergency services only, locate customers identified as “roaming” in the affected area, and relayed relief instructions via text message.

Crisis Communication in a Campus Setting

Representing communities comprised of professional, educational, and residential constituents, campus administrators face unique circumstances when determining the appropriate scope and breadth with which to transmit emergency messages. University communities are comprised of a diverse network of constituents including groups such residential students, commuter students, faculty, staff, parents, and neighbors; each of whom maintain specialized relationships with the institution. Recognizing that each group possesses a vested interest in receiving information about the university, communication managers are tasked with the difficult job of choosing which messages are appropriate to send to whom and when.

The Crisis Matrix

Although an abundance of scholarly literature exists to advise a variety of organizations on general crisis communication practices, the college and university community suffers from an apparent dearth of information focused on the unique challenges posed by crisis events that occur

within their distinct settings. Zdziarski II, Dunkel, Rollo and Associates (2007) applied existing crisis communication theory specifically to the college and university setting by compiling a collection of research from administrators with distinct crisis experience at institutions throughout the United States. The concepts in their book echo the sentiment that although universities have always engaged in crisis planning and response, the high profile events that have occurred on college campuses in recent years combined with the changing landscape of available communication technologies require institutions to analyze and update existing procedures and protocols. Within the book's body of research, two models emerged that apply to the line of research being examined in this study. First, similar to Coombs' SCCT theory, the crisis matrix (see Figure 1) is presented as a means of determining the appropriate response type based on the level of crisis, type of crisis, and intentionality of the crisis. However, unlike SCCT, this model focuses considerably less on attribution theory and reputation management and more on real-time communication with the affected populations, which is more characteristic of the types of crises examined in this study.

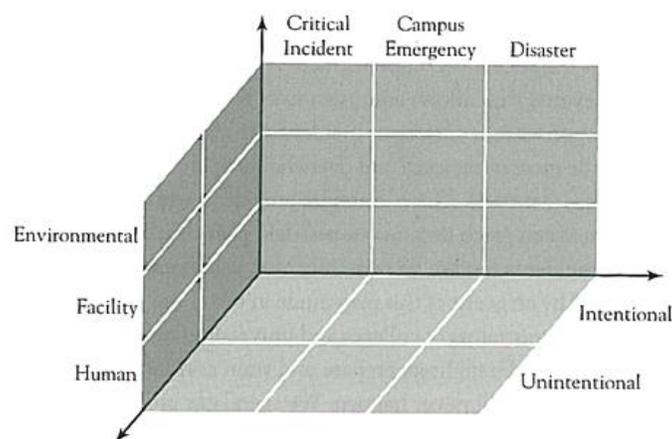


Figure 1 The Crisis Matrix (Zdziarski II, et al., 2007, p. 36)

In this model, Zdziarski II, et al. (2007) presented a matrix of using three determinant metrics that help crisis managers decide which methods of communication should be employed during a given crisis. The first factor, the level of crisis, is broken down in order of severity into critical incidents, campus emergencies, and disasters. The second factor for consideration is the type of crisis at hand, which could consist of environmental, facility, or human crises. Finally, the authors recommended weighing the intentionality of the event. Where much of existing contemporary literature focuses on the general pre-crisis planning and post-crisis response phases, this model not only serves as one of the few tools designed to help crisis managers hypothesize about a variety of possible in-crisis scenarios and plan for the unique communication requirements that each situation poses, but it also helps to identify breaches in the crisis plan before actual events occur.

Four-Step Crisis Communication Process

Lawson (2007) developed the four-step communication process to extend existing crisis communication strategy literature into an applied setting by connecting theory to distinct college and university issues. With a focus strictly on communication response rather than general emergency response, she devised the following series of steps to assist communication managers engaged in crisis planning and response: prepare, respond, recover, and learn. While many of the recommendations included in this model are similar to traditional crisis response theories, Lawson cited examples that are more prevalent among university communities than in other organizations. She specifically noted that the typical levels of bureaucracy present in most institutions must be addressed in order to empower the communication staff with the autonomy necessary to make quick decisions and deliver prompt messages without being delayed by unnecessary protocol. Lawson's four-step crisis communication model succinctly and directly

adapts established theories from public relations research into a practical set of guidelines that can be applied by crisis communication managers at any college or university.

The Clery Act

Perhaps the most pivotal event affecting crisis and emergency communication on college campuses was the passage of the Crime Awareness and Campus Security Act of 1990, which is now known as the Jeanne Clery Disclosure of Campus Security Policy and Crime Statistics Act (Harshman, Puro, & Wolff, 2001; Zdziarski II, et al., 2007). This act resulted from the efforts of the parents of Lehigh University student Jeanne Clery, who was raped and murdered in her dorm room by another student in April 1986. Howard and Connie Clery believed that if accurate statistics of violent crimes and security violations occurring at Lehigh had been available for public review, their daughter's tragic death might have been avoided; and they successfully campaigned to achieve federal passage of laws requiring the disclosure of such information (Security on Campus, Inc, 2011).

As a result of this legislation, all postsecondary institutions that are eligible for Title IV funding for student financial aid must:

1. disclose public safety procedures for addressing and reporting criminal activities;
 2. collect, retain, and report current and historical records of criminal activity on or near campus; and
 3. disseminate information about criminal activity both during and after report events
- (U.S. Department of Education, 2005).

The Clery Act stops short of providing a clear definition of what amount of time is constituted as being acceptable, nor do they specify exactly what information must be included in the warning or which communication tools must be used. The Department of Education's

Handbook for Campus Crime Reporting (2005) included a recommendation that the institution relay pertinent information to the entire community with the likelihood of preventing similar related events. Each institution's emergency management team is given the freedom and responsibility to interpret how the vague, yet flexible, principles mandated by the Clery Act apply to its own campus within the context of each unique situation.

Benchmark Case: The Crisis at Virginia Tech

While emergency preparedness and crisis planning has existed on college campuses for centuries, the criteria by which emergency response is judged was changed forever on April 16, 2007. On this date, Virginia Tech student Seung Hui Cho brutally assassinated 32 students and faculty and injured 17 others before eventually taking his own life after a shooting rampage that lasted for nearly eleven minutes (Virginia Tech Review Panel, 2007). Many aspects of this event have been scrutinized and analyzed for their efficacy, including the response of professionals in the mental health, educational administration, and law enforcement fields.

However, the primary focus of this study concerns the successes and failures of the communication response during the massacre at Virginia Tech that have altered the discourse surrounding crisis communication on college campuses since 2007. The Virginia Tech Review Panel (2007) issued a scathing criticism of the communication breakdown in its key findings:

The protocol for sending an emergency message in use on April 16 was cumbersome, untimely, and problematic when a decision was needed as soon as possible. The police did not have the capability to send an emergency alert message on their own. The police had to await the deliberations of the Policy Group, of which they are not a member, even when minutes count. The Policy Group had to be convened to decide whether to send a message to the university community and to structure its content. (p. 17)

According to the official report prepared for Virginia Tech (Virginia Tech Review Panel, 2007), on April 16, 2007, numerous campus alert systems were in place for administrators to be able to contact students, faculty, and staff. Although the university was later criticized for failing to issue timely warnings in response to isolated shootings that occurred before dawn in a campus residence hall, the university crisis plan activated in response to the mass shootings in the Norris Hall academic building included multiple communication tools. The crisis management team deployed the university's broadcast e-mail system, which included 36,000 addresses with in-crisis delivery of approximately 10,000 per minute. During the crisis, the university Web site received 148,000 visits per hour and featured prominent crisis-related information throughout the duration of the event. Local news media was notified, as university officials maintained preexisting protocols with major local television and radio outlets for sharing emergency notifications for public broadcast. Virginia Tech's broadcast phone-mail system was used to send messages to all faculty and some student phones, though the cumbersome process of initiating the messages slowed down the delivery. The university switchboard provided up to four operators and could accommodate hundreds of calls per hour. Several outdoor loudspeakers had recently been installed to be used for either voice messages or sirens, although this tool was not utilized until after the shootings had already begun. Finally, designated university representatives in assigned locations were instructed to deliver personal warnings to supplement all other methods by helping to spread the message via word-of-mouth.

The report also noted that in April 2007, Virginia Tech administrators, already recognizing the need to streamline their emergency communication capabilities, were in the process of finalizing and implementing a new, streamlined multimedia messaging system, which was to include text messaging capabilities. However, since the completion date was not

scheduled to take place until later in the semester, this system was not available during the crisis to send text messages to the estimated 96% of students claiming to carry cell phones at all times. Incidentally, much of the communication that provided law enforcement and emergency response teams with the information needed to assess the situation came from cell phone calls placed by individuals located inside Norris Hall as the shootings took place (Virginia Tech Review Panel, 2007). The fact that a number of institutions were also in the process of integrating text messaging systems into their crisis communication plans, combined with the overwhelming popularity of cell phone usage among college students, allowed the Virginia Tech tragedy to serve as an impetus to thrust adoption of this new technology into the discourse of crisis planning on college campuses across the United States.

Although a multitude of crises, both natural and manmade, have occurred on higher education campuses before and after April 2007, the massacre at Virginia Tech has become a benchmark against which the handlings of subsequent crisis communication responses have been judged. In 2007, very few higher education institutions had integrated text message notification into their emergency communication plans, compared to the nearly 88 percent of all colleges and universities equipped with emergency text messaging systems in 2010 (Lipka, 2010). Within weeks of the Virginia Tech tragedy, multitudes of higher education administrators complained of being bombarded with sales pitches from opportunistic emergency notification vendors (Fischman, 2007), but campus communities' perceived personal empowerment granted via emergency text messaging fueled a demand that drove hundreds of campuses to sign contracts with such companies within six months of the event (Foster, 2007). Following the initial wave of institutions integrating emergency text messaging systems into their crisis communication plans, early adopters of the technology reported similar complaints with the systems'

performance and the medium's effectiveness during subsequent testing and actual crisis scenarios (Foster, 2007; Hoover & Lipka, 2007; Young, 2008).

Given that new technologies are often improved upon over time based on knowledge gained through actual experience, this study was designed to examine the experiences of how colleges and universities have integrated emergency text messaging into their planned crisis communication response to disseminate emergency information to stakeholders, such as students, faculty, staff, and parents, during crises affecting their campuses.

Research Questions

This study, grounded in crisis, risk, and emergency management theory (e.g., Cho & Gower, 2006; Coombs, 2007; Mitroff & Aganos, 2000) examined how colleges and universities have integrated a relatively new communication technology, emergency text messaging, into their planned crisis communication response to disseminate emergency information to stakeholders, such as students, faculty, staff, and parents, during crises affecting their campuses. Through grounded theory, data systematically obtained and analyzed offer: (1) a running theoretical discussion using conceptual categories and their properties related to crisis communication theories and models, and (2) additional best practices that can be applied in a university setting to increase the likelihood of a successful emergency response.

As such, the following series of research questions was devised:

RQ1: How have colleges and universities incorporated emergency text messaging systems into their crisis communication plans?

RQ2: How have these institutions tested such emergency notification systems?

RQ3: What, if any, prevalent gaps exist between audience expectations and actual practices?

RQ4: What are the perceived strengths and weaknesses of using text messages to communicate with campus communities during times of crisis?

CHAPTER III

METHODOLOGY

Ontological Implications

To adequately develop solid research questions, rigorous research procedures and defend the legitimacy of their work, scholars must be aware of how ontological, epistemological, and methodological assumptions influence not only their approach to conducting research and interpreting data, but also how their work will be received among their peers. Stemming from the dominant neo-positivist ontological perspective that a reality or truth exists, much crisis communication research has been conducted using quantitative methods to collect empirical evidence to identify and measure causal relationships. As a result, crisis communication literature is dominated by research focused on the post-crisis concepts of image restoration theory (Benoit, 1995) and SCCT (Coombs, 1995), leaving substantial theoretical gaps in pre-crisis research (Avery, et al., 2010; Gilpin & Murphy, 2010; Sellnow, Seeger, & Ulmer, 2002). By contrast, subscribers of the humanist or interpretivist perspectives challenge the notion of a single reality due to the complex relationships present in the social world, instead favoring context-based interpretation of the data over empirical, finite analysis (Lincoln & Guba, 1985, Loosemoore, 1999).

Morrison, Haley, Sheehan, and Taylor (2002) acknowledged that while quantitative research methods are excellent sources for discovering “how many,” qualitative approaches provide insight to the “what” and “how” explanations of symbolic meaning. McCracken (1988) asserted that qualitative understanding provides context for quantitative data by explaining how culture mediates human action. Through qualitative analysis, the goal of conducting this research was to generate theoretical implications to help understand the gradual development of

a social phenomenon over time rather than ascribing a finite reality (Loosemore, 1999). As such, this study was guided by the humanist perspective under the belief that qualitative research provides an opportunity to present a more comprehensive analysis of the complex realities and assumptions that have led to the current state of text message alert systems on university campuses. This approach is consistent with Avery, et al.'s (2010) call for more diverse contextual and methodological applications of crisis communication research in public relations.

Strategy for Analysis: Grounded Theory

The codes, concepts, categories, and theories that emerged over the course of this study were constructed using the grounded theory approach to analyzing data. Glaser and Strauss (1967) introduced the concept of grounded theory as an alternative method of conducting academic research when empirical, quantitative data might not reveal complex and subtle qualities present in some relationships. Rather than following the traditional quantitative methodology of using existing theory to guide the research process, the grounded theory approach enables the researcher to formulate and substantiate hypotheses as patterns and relationships emerge through the research being conducted.

Since its inception in 1967, grounded theory research has developed along two different but intertwined branches. This study follows the approach proposed by Corbin and Strauss (2008), as opposed to the classic or Glaserian ground theory approach (Glaser, 2002). Corbin and Strauss (2008) specified that grounded theory is “used in a more generic sense to denote theoretical constructs derived from qualitative data” (p. 1). The paradigmatic orientation of this study and its reliance on qualitative data analysis warrant this selection. However, the core concepts of theory creation from data and the approach to achieving this goal are rooted in the original work published by Glaser and Strauss (1967).

Grounded theory has been acknowledged by numerous scholars (e.g., Charmaz, 2006; Denzin & Lincoln, 2005; Lincoln & Guba, 1985; McCracken, 1988) as a useful means of exploring new lines of research, granting the researcher a degree of liberty when identifying and interpreting emerging themes that have yet to be thoroughly developed in existing literature. Given the dearth of academic research available in the specific field of crisis communication on college campuses, the grounded theory approach served as an appropriate method for generating research-based substantive theory applicable to practitioners of crisis communication on campuses while also discovering phenomena worthy of future scholarly exploration. In summary, the purpose of grounded theory research in communication management is to develop new concepts and theories of communication-related phenomena, where these concepts and theories are firmly grounded in qualitative data.

The primary purpose of comparative analysis within grounded theory is to generate new concepts and theory as opposed to verifying existing theory. Glaser and Strauss (1967) maintained that its aim is “not to provide a perfect description of an area, but to develop a theory that accounts for much of the relevant behavior” (p. 30). Recognizing that qualitative research should not be excused from following proper scientific protocols, they also acknowledged the importance of verifying the data’s accuracy as much as possible without stifling the generation of new ideas.

In response to the critics of this approach, Glaser and Strauss (1967) defended theory generated via comparative analysis by pointing out that “most hypotheses and concepts not only come from the data, but are systematically worked out in relation to the data during the course of the research” (p. 6). They asserted that by allowing the researcher to explore discoveries in the data that might be disregarded in quantitative research, the “empirical generalizations” developed

through constant comparison foster a broader, more applicable theory that has “greater explanatory and predictive power” (p. 24). In essence, diminishing the reliance upon statistical significance encourages the researcher to further examine partial relationships. Although researchers are advised against entering the study with preconceived theories guiding the process, Glaser and Strauss acknowledged that solid grounded theory often combines elements of relevant existing theory with newly discovered hypotheses and concepts.

Glaser (2002) explained that through grounded theory, patterns are carefully discovered by constantly comparing the collected data until validity is achieved at the point when repetitive, fundamental patterns are succinctly broken into categories and named accordingly. Theoretical sampling occurs when subsequent data collection is driven by and adjusted in response to the ongoing analysis of relevant concepts that manifest throughout all phases of the study (Corbin & Strauss, 2008). Categories emerge from repetitive themes observed in a general review of the data, and smaller, distinct properties discovered during a detailed review of the data are later coded and placed within the categories to demonstrate the concept. According to Glaser and Strauss (1967), “the evidence may not necessarily be accurate beyond a doubt, but the concept is undoubtedly a relevant theoretical abstraction about what is going on in the area studied” (p. 23). They subsequently invited further comparisons, whether qualitative or quantitative in nature, to be conducted by future researchers.

Qualitative researchers must adhere to sound scientific practices, though they should not attempt to define grounded theory research through strict interpretations of quantitative tenets. The principal empirical concepts of significance, generalizability, reproducibility, and verification, among others, must first be adapted to allow for the humanist perspective of a flexible social reality, but the process by which the researcher intends to assert theoretical

implications must be explicitly outlined (Corbin & Strauss, 1990). Glaser and Strauss (1967) asserted that the saturation of the data coded within carefully constructed categories acceptably satisfies these requirements:

The constant comparative method is concerned with generating and plausibly suggesting (but not provisionally testing) many categories, properties, and hypotheses about general problems. No attempt is made by the constant comparative method to ascertain either the universality or the proof of suggested causes or other properties. (p. 104)

With little existing research conducted on the effectiveness of mass notification through emergency text messaging during times of crisis, combined with the rapidly changing nature of this new technology, the grounded theory approach provided an appropriate framework for analyzing a new social phenomenon that is undoubtedly deserving of additional study.

Data Collection Methods

The data collected in this study through in-depth phone interviews of public relations practitioners, as well as through a document analysis of media coverage of campus crises, offered a humanistic and constructivist perspective about circumstances related to emergency text message alert systems that few researchers to date have explored. To understand the meaning of using emergency text message alert systems on campuses from the perspective of crisis communication managers, it was important to gain insight directly from the campus employees who are responsible for the day-to-day adoption, training, and use of these emergency alert text-based systems. Qualitative interviews can provide contextual explanations of empirical data, and the flexible nature of this method of data collection allows the researcher to adjust the line of questioning to further probe points of experience and insight revealed by participants throughout the course of the study (Charmaz, 2006). Recurring themes that emerged in early

interviews were further clarified and contextualized both by considering the document analysis of campus crises events and through theoretical sampling during subsequent interviews of individuals possessing unique sets of related crisis experience (Corbin & Strauss, 2008).

Document Analysis

Recognizing that existing scholarly work addressing this specific line of research is limited in crisis communication studies, document reviews of coverage of the events surrounding previous natural and manmade campus emergencies were also conducted to establish a general awareness of recurring themes and issues. Glaser and Strauss (1967) established content analysis as a long accepted form of research by asserting that secondary sources of literature provide a contextual understanding of the subject being studied and can lead to a preliminary, non-binding foundation of the researcher's hypotheses.

As such, a document analysis of articles (N=36) from *The Chronicle of Higher Education* initially served as an introductory resource to familiarize the researcher with common scenarios and outcomes experienced in previous campus emergencies during which text messaging was used to relay crisis-related information. Later in the study, after interview content was coded and collected, the document analysis also helped to enhance trustworthiness and offer a triangulated approach to analyzing the data (McCracken, 1988).

The Chronicle of Higher Education has covered such events from a unique higher-education perspective, and commentary from members of the college and university community offered insight not often present in traditional news outlets. The researcher collected articles by conducting keyword searches on the publications Web site using general crisis terms such as "emergency text messaging," "emergency communication," and "text alert," as well as institution-specific keywords naming campuses known through popular media to have deployed

an emergency text messaging system during a crisis. Since this technology dates only as far back in popularity to 2005/2006, the researcher did not impose a date range limitation on the search, and as such was able to analyze the changing environment of this new technology over the course of its inception to the present date.

In-depth Interviews

Primary data was collected through a series of interviews (N=10) with crisis communication professionals at higher education institutions throughout the United States. The interview consisted of grand-tour questions regarding community participation, anticipated bandwidth, competing text services, supplemental information, system testing, and other related issues, such as the institution's proclivity to experience certain types of disasters and crises (see Appendix A). Participant responses offered qualitative descriptions to provide context for implications to be drawn from the results of the study. The phone interviews were conducted and archived using Internet call-recording software, and the researcher transcribed each session verbatim upon completion of each call so that the simultaneous collection, coding, and analysis of the data directed subsequent progress (Glaser & Strauss, 1967).

Although interviews conducted in the participants' natural environments are widely recognized as being ideal (McCracken, 1988; Morrison, et al., 2002), budget constraints prevented the researcher from traveling to the widespread geographic locations of the sample population. Such a limitation necessitated the use of phone interviews with the study's participants. However, conversations were recorded to assist in providing reliable transcription of the data, and special attention was given to sounds and tone of voice that denote possible contextual information lost over the phone (Morrison, et al., 2002).

Rather than stating statistical facts about how colleges and universities use emergency text message systems, the data collected in this study was used to discover and describe crisis communication managers' meanings in the use of the systems' benefits and shortcomings, including their ability to handle increased volume in short time periods, potential to interfere with voice communication, limitations in message length, and delays in message reception. Although the interviews were conducted using a template of predetermined questions, the qualitative nature of this method of data collection afforded the researcher the flexibility to follow new leads as they emerged (Charmaz, 2006).

McCracken (1988) suggested that the sample consist of at least eight interviews in order to attain a "mutual consistency" by which the data can be compared. Consistent with the grounded theory approach to coding and as is typical among qualitative studies, the researcher engaged in theoretical sampling by interviewing new participants and following up with previous interviewees in order to collect more comprehensive data regarding specific patterns that emerged in the data. As recommended by Corbin and Strauss (1990), the researcher systematically analyzed the data throughout the course of the interview period as opposed to upon completion of the data collection process and adjusted the line of questioning accordingly in subsequent interviews. Interviews were conducted until no new themes emerged and a saturation of categories was achieved, thereby providing evidence to later suggest theoretical implications that might explain much of the relevant behavior (Glaser & Strauss, 1967).

For the purposes of this study, the discourse became adequately redundant after the first eight interviews as no new themes emerged and mutual consistency was achieved. Transcripts of the data were analyzed through the use of field notes and open coding until common themes among the data were identified. Recurring themes and shared meanings manifested through

quotations from study participants substantiated the category choices, and the data analysis compared and contrasted practices and experiences with the ultimate goal of generating substantive theory to promote positive behavioral changes in systematic disbursement of crisis-related information.

Sampling Strategy

The purposeful sample of schools represented in the study included participants from several campuses publicized in national media for having already experienced large-scale events that required the crisis communication plan to be activated. Initial participants were selected by first contacting individuals from such institutions who had direct experience with either developing the campus crisis communication plan, making the decision to deploy the emergency text message system, or tactical deployment of emergency notifications. Subsequent participants were recruited using a snowball technique in which qualified peers with relevant experience were recommended by initial interview participants (Krauchek & Ranson, 1999).

With the intention of comparing and contrasting practices among institutions, interviews were conducted with crisis communication managers on campuses throughout the United States. Since job titles and institutional divisions for individuals serving in this role may differ among schools, acceptable job titles of individuals fulfilling the duties of a *crisis communication manager* included directors and managers of *communication, news and information, media relations, emergency management, and public safety*.

The sample included a balanced combination of private and public colleges and universities, as well as both those with small and large student populations. To lessen the likelihood of finding anomalies in the data sample and to examine if inferences can be made regarding trends among similar institutions, the criteria for inclusion in this study required that

the institutions have an institutional size of at least 1,000 students, offer a degree-granting status of Master's level or higher, and have previous experience with deploying an emergency text messaging system to disburse campus-wide information. As suggested by Glaser and Strauss (1967), the researcher enhanced the study's generalizability by selecting participants to represent expansive geographic regions of the United States each concerned with an equally broad variety of crisis situations.

In order to build a list of study participants, the researcher initiated preliminary email and telephone communication with potential candidates to inform them of the nature and purpose of the study and to request their participation. Prior to contacting potential participants in this study, the researcher obtained approval from the Institutional Review Board at the University of Tennessee Knoxville. None of the institutions contacted during the prescreening phase failed to meet the stated criteria. Upon scheduling a phone interview for a later date, participants were asked to return signed notices of consent (see Appendix B) that detailed the steps that would be taken to assure their confidentiality. After completing the phone interview, the participants were also asked for recommendations of potential participants at other colleges and universities, some of whom also agreed to be interviewed for the study. All participants were all offered nominal monetary compensation for their time in the form of a \$25 gift card through support by the University of Tennessee's Risk, Health & Crisis Communication Research Unit, but several chose to decline compensation.

Coding

Existing research in the area of risk and crisis communication provided a theoretical foundation for the analysis, while a document analysis of previous media reports examining the successes and failures of emergency communication presented the framework for understanding

and categorizing the responses gathered during the interviews (e.g., Catullo, et al., 2009; Gordon, 2007; McCracken, 1988; Vielhaber & Waltman, 2008). Rather than engaging in the linear process of gathering data then analyzing the results, the grounded theory approach involves ongoing consideration of prominent themes and categories and adaption of techniques throughout the duration of the data collection process. According to Glaser and Strauss (1967):

The constant comparing of many groups draws attention to their many similarities and differences. Considering these leads [the researcher] to generate abstract categories and their properties, which, since they emerge from the data, will clearly be important to a theory explaining the kind of behavior under observation. (p. 36)

With recurrent reflection upon the general body of collected data, the researcher uses coding to allow the raw results to transcend literal meaning into greater analytic explanations that tie the phenomena to emergent theory (Charmaz, 2006).

The coding process serves as a qualitative redefinition of standardized quantitative methods for analyzing data. Through coding, the larger collective discourse describing a phenomenon is broken into smaller manageable pieces of information, which are ultimately grouped into succinct categories that explain emergent themes and substantiate theoretical claims drawn by the researcher. Grounded theory coding should include a minimum of two phases of coding, the first of which acknowledges individual words, lines, or fragments at the micro-level, followed by a broader sorting of recurrent codes emerging from the initial analysis (Charmaz, 2006). Coding continues “until a theoretical theme is developed which can link facts in a comprehensive and coherent way to present a clear portrait of social reality” (Loosemoore, 1999, p. 11).

In this study, the data collected in the interviews were categorized using the constructs of *open*, *axial*, and *selective coding*. Open coding, which was conducted at the line-by-line level for each transcript, offers a literal interpretation of the data and assists the researcher in abandoning preexisting mindsets by forcing every piece of data to be examined for inclusion rather than only those that conform to the questions posed from the onset of the study (Charmaz, 2006). The natural progression of qualitative data analysis then moved from open coding to axial coding, whereby prominent themes present in the document analysis and interview transcripts were classified under larger categories by comparing common characteristics. The final stage of selective coding required a comprehensive analysis of axial codes to determine which categories achieved greatest salience, and only those with the most explanatory power were ultimately included for discussion (Charmaz, 2006).

Ensuring a Rigorous Quality Study

As Corbin and Strauss (2008) pointed out, there are numerous manners to evaluate the quality and rigorousness of qualitative research. In this study, the quality of the research is ensured through multiple approaches including: (1) adhering to criteria of adequacy and appropriateness of data, (2) careful documentation of the audit trail, and (3) having training or experience with qualitative research.

The first approach to achieve a high quality study is by adhering to the criteria of adequacy, which has already been addressed. This refers to the amount of data collected or the point of sufficient data collection, the point of saturation and the appropriateness of the data, and the selection of participants according to the needs and the emerging design of the study. Another element for ensuring the quality of the data collected is applying a form of triangulation, which has also been previously identified within this study. Carefully documenting the audit

trials is the second form of quality control. Additionally, the process of generating grounded theory needs to be presented in such a manner that it becomes clear that careful analysis and not researcher bias led to the results.

Given the subjective criticisms of qualitative research, the researcher took several additional precautions to ensure a rigorous quality study. Conducting interviews via telephone allowed the researcher to develop a broader sample population of schools with diverse geographic and demographic characteristics and challenges (Hon & Brunner, 2000). To gain trust among the participants, thereby encouraging a frank discussion of the subject matter, the researcher established several protocols to ensure confidentiality. All participants, as well as the researcher, signed a confidentiality agreement (see Appendix B) informing participants that the analysis would not use information revealed during the interview to refer to a person or institution by name or in a manner that implicitly suggested the identity of a specific party. Instead, the final report referred to schools with general geographic and demographic descriptors that are categorized by broad institutional characteristics. Participants were informed that the final report might, however, reference information obtained from existing studies or news excerpts available in the public domain.

As acknowledged in the constructivist approach to grounded theory, researchers conducting qualitative research to generate theory must remain cognizant of the influence that interacting with participants, as well as preexisting assumptions, may have on the results (Charmaz, 2006; Corbin & Strauss, 1990; Loosemore, 1999). Additionally, McCracken (1988) advised against inadvertently injecting personal bias during the delivery of the survey items by including seemingly benign details that steer the interviewee's answers in a particular direction. To mitigate such unintentional disruptions, the interview instrument was designed in a manner

that guided the discussion to ensure that key points are address while simultaneously allowing the flexibility among participants to extrapolate on details that they deemed to be relevant to the topic. As unexpected recurring themes began to emerge over the course of several interviews, the instrument was adjusted to offer equal opportunity for commentary from subsequent participants, as well as to allow for adequate exploration of relevant concepts consistent within the constructs of theoretical sampling (Corbin & Strauss, 2008).

CHAPTER 4

RESULTS AND DISCUSSION

Although the technology and infrastructure currently in place to support mass notification via text messaging has improved greatly since its introduction onto college campuses in the mid-2000s, crisis communication and emergency management professionals continue to learn more about this technology as they confront new situations and analyze their experiences. Many of the individuals interviewed in this study shared similar experiences and perceptions regarding the use of text messaging in various campus crises, yet their unique perspectives illustrated how effective crisis communication does not result from a one-size-fits-all approach.

The following results and discussion provide a contextual descriptive overview of broadly consistent themes and patterns that emerged in the data. As outlined in the sampling strategy, individuals interviewed in this study served as *crisis communication managers* under various titles, such as directors and managers of *communication, news and information, media relations, emergency management, and public safety*. For the purposes of discussion, these individuals were referred to in the results under the general terms of *participants, administrators, communication managers, and interviewees*. Though the researcher acknowledges the benefits of including full transcripts of each interview in the appendices, upon further review, providing such details without compromising the confidentiality of the participants or their respective institutions proved to be impossible.

The intention of collecting data from both participant interviews and a document analysis was to triangulate implications discovered throughout the research process through a broadened sample size. Ideally the researcher would be allowed to compare the perceptions of crisis

managers interviewed in the studies with those present in the document analysis among representatives of other populations, both at other schools and in other demographic groups such as students. However, as emergency text messaging has become more common on college campuses, fewer articles have been published on the topic. The majority of the articles analyzed in this study primarily revealed opinions and criticisms shared within higher education within two years after the Virginia Tech crisis, many of which have changed as indicated in the current themes reflected in the interview data. As a result, the data collected in the document analysis served as means of establishing a historical reference of the initial problems experienced with implementing emergency text messaging systems, and comparisons with data collected in the interviews demonstrate how the use of the technology has evolved since its mainstream integration among higher education crisis plans in the immediate time frame following the Virginia Tech event.

Grounded theory coding constructs provided the methodological framework for translating the raw data collected in the interviews and the document analysis into meaningful results and discussion. Through grounded theory, data systematically obtained and analyzed offer: (1) a running theoretical discussion using conceptual categories and their properties related to crisis communication theories and models, and (2) additional best practices that can be applied in a university setting to increase the likelihood of a successful emergency response. Repetitive themes discovered during the open coding phase were supported by quotations extracted from the data, and more prominent axial codes were presented as subheadings used to organize the results, all of which lead to a single dominant theme that emerged during the review process of selective coding.

The research questions posed in this study, grounded in crisis, risk, and emergency management theory (e.g., Cho & Gower, 2006; Coombs, 2007; Mitroff & Aganos, 2000) addressed how colleges and universities have incorporated emergency text messaging systems into their crisis communication plans; how these institutions have tested such emergency notification systems; what, if any, prevalent gaps exist between audience expectations and actual practices; and what are the perceived strengths and weaknesses of using text messages to communicate with campus communities during times of crisis.

Results

Campus Crisis Communication Tactics

RQ 1 explored how colleges and universities have incorporated emergency text messaging systems into their crisis communication plans. Axial coding of the interview transcripts and document analysis reduced the data to a number of key thematic findings related to the use of emergency text messaging systems during campus crises, such as motives for adopting such devices, tactical implementation and integration of the technology, subscriber data collection and maintenance, and audience expectations and behavior, among others.

As of April 16, 2007, only one of the institutions represented in this study would have been able to include emergency text messaging in its response to a campus crisis, showing that Virginia Tech was not alone in lacking this new technology when confronted with the attacks that took place. However, at the time that the interviews were conducted, all ten of the higher education institutions included in this study currently had the capability to utilize emergency text messaging, along with other communication channels, to broadcast emergency notifications to its publics. No institutions were turned down during the sampling phase for failure to meet this criterion. To date, the interview participants reported that the average length of time that an

emergency text messaging service had been implemented on the campuses studied in this project was three to five years.

Influence of the Virginia Tech crisis.

Nearly all of the study's participants referred to the Virginia Tech case during the interview, illustrating its place as a benchmark regarding the subject of modern crisis communication on college and university campuses. A communication director previously accustomed to serving in a primarily social or media relations capacity conveyed the iconic nature of this event when stating that "*the crisis communication part of my job really emerged and came to the forefront after Virginia tech in 2007, April 16, 2007, which is kind of one of those dates like Kennedy's assassination that is indelibly etched in your mind.*"

One respondent specifically cited the Virginia Tech tragedy as being the impetus to seek a text messaging service for emergency notification. Another subject noted that benchmark events such as what happened on the Virginia Tech campus force administrators to self-reflect and consider if their own plan could have adequately handled the situation: "*There was a whirlwind of text messaging companies and concern about 'if this happens here, how are we going to protect ourselves? How are we going to notify people in a timely manner?'*" The resounding response to this discussion in this study by administrators interviewed, as well as those referenced in the document analysis, was that they could not have adequately handled the situation, which prompted the mass migration to text messaging systems being included in crisis communication plans.

Redundancy in communication tactics.

One communication director described the university's emergency text messaging system as being "*one very important part of a comprehensive emergency notification.*" In addition to

text messaging, the institutions' general crisis communication plans included tactics such as emails, desktop computer notifications, messages on LED display boards in common areas, sirens, emergency hotlines, and text-to-voice dialing systems. Though all institutions included in the study incorporated text messaging into their crisis communication plans for sending notifications of imminent threats to public safety, this technology was not unilaterally the preferred method of sending all types of communication, and administrators choose among the channels which one is most appropriate for a given situation or for disbursing ongoing crisis related information: *"We try to encourage people, whether we're open for business or not, to go to the university website or call the phone number."*

Institutions contract third-party vendors to provide the software and host the system from an off-site location, and campus administrators are able to access the interface from both on and off campus locations. Some systems were set up strictly to send text messages, while others combined data points by sending texts, emails, and voice messages managed through one central console. Of the schools that reported using a text-only system, their reason for doing so was to limit the volume of outgoing messages from any one system so as not to slow down the delivery speed. One administrator supported this mindset in saying that *"the text alerts are so important. We just don't want one to interfere with the other."* Another participant cited improved performance after switching to a single-channel console: *"The text messaging, when we separated it from emails, went way faster."* However, one such school indicated that this created a secondary problem in that during an emergency, the team of responders had to move from system to system, starting with text and moving on to email and phone, which delayed the amount of time in which the general communication plan could be enacted.

Subscription rates among institutions.

While the estimated participation rates regarding the number of subscribers at each institution varied from 25% to 99%, all of the communication managers expressed satisfaction with the percentage of eligible recipients that were subscribed to their alert system, stating that the other layers of communication tactics would safeguard the participation gap. One participant observed that notable crises occurring on campuses often serve as an impetus to boost subscriptions to text messaging services, stating that the communities react to situations with which they can relate:

It will grow every time there's an incident on campus, you know. And especially if it's something fairly serious, like an assault or something and there is something that goes out. Usually the registration will jump, because people, well, you, know, it's more on their mind. It raises awareness about what emergency notification can do.

Some institutions chose to limit subscriptions to actual on-campus community members, citing an interest in limiting the size of the database, while others opened participation to external numbers that may include parents, spouses, members of local media and emergency response agencies, and other interested parties. The different philosophies regarding subscription procedures indicate that those institutions favoring exclusivity were driven by a desire to preserve system performance while those offering inclusive options prioritize ultimate transparency among its publics. Because the recipients of text messages may incur charges associated with receiving emergency notifications, only one school chose to require students to sign up for the alerts: *"We don't have the right to demand that we have your cell phone number and then forcibly sign you up because it could cost you money. You have to do it yourself."*

Responses regarding efforts to solicit new subscribers heavily favored new students, staff, and faculty members, as most subscription campaigns occurred during new student and employee orientations. Administrators rationalized this decision in a variety of ways:

We're probably not as comprehensive in trying to get them to sign up. There are reminders sent out several times per year for them to do that, but it's not as aggressive as with the students.

With the students, they're required to give an emergency phone number during registration, and that's why the subscription numbers are so high. With the staff, it's more voluntary. On a semester basis, I send a group email message to faculty and staff inviting them to sign up for the text messaging and give them that link.

We do not recruit them to the degree that we do with students because we have so many fewer faculty and staff and we have other mechanisms that they're used to tapping into when there's an emergency on campus. So our focus has been primarily students.

Though two schools integrated a data collection form into the online course registration process, the data indicated that most schools displayed a tendency to become complacent with subscription rates and recruitment methods beyond campaigns held during the system's initial introduction on campus or at orientation, and somewhat neglected returning students, inactive students, and faculty and staff.

Data management.

The schools included in this study reported mixed methods and frequency of purging and cleaning data to promote the integrity of the database. Multiple schools reported purging data each year after graduation, but they consider several factors beyond graduation lists and cannot simply remove students from the system based on one factor, since some students transfer or drop out, while some recent graduates remain on campus to continue taking classes.

The ramifications of reducing the number of records in the database were directly related to system performance, as one communication manager noted:

Well, it is a problem. I can tell you offhand, I mean, I know for a fact that the more people register, the more numbers, the more destinations that a message is going to, the slower the delivery. And that can be a problem. We've had messages sent out that get hung up because you not only have outgoing traffic with cell phones, but you have incoming. You've got people calling the campus, calling their son or daughter, and you get this whole huge convergence of activity and the communication can break down. And it can slow up delivery of those messages. So volume is a problem.

Administrators attempted to crosscheck registration records over an average of one year before purging an inactive record to ensure that the student has actually severed ties with the institution and that students expecting to receive alerts remain included in the notification. They also reported that employees are easier to purge since their exits are processed routinely through the human resources office.

In addition to the strain imposed on the system due to inflated sizes, inaccurate database records were also problematic for administrators. Some issues cited were typographical errors in the phone number field, changing phone numbers, and inclusion of off-campus parties such as

parents and significant others. One participant explained the how incorrect subscriber records skew performance reports when stating that “*we always end up with reports of undeliverable messages that students changed phones and forgot to resign up, and this number is no longer active.*”

Collaboration among emergency personnel.

Emergency response personnel collaborated as a team prior to times of crisis in order to orchestrate successful emergency responses. Some text messaging systems were deployed by communications personnel while others were triggered by law enforcement officers. Most of the subjects interviewed in this study reported having a hybrid system in place that granted primary responsibility with communication officers while empowering law enforcement officers to take immediate action in deploying the text messaging system if they believe that hastening the response time is critical to increasing public safety.

One administrator described how individuals from various administrative levels and units collaborate during a crisis to present a streamlined, accurate, and effective message:

These decisions almost always originate from the campus police because they are the first responders to anything. And so we have a communications system set up here with myself, the campus police, a few other key people, there are probably 4 or 5 of us. We all dial into one number. The police give us the facts of what they know, and then we make the determination right then and there of what type of message to send, how to deploy it, and then we go do it.

Another manager indicated that law enforcement officers trigger the initial response, and that the communication division supplements subsequent messages based on the information provided by first responders:

After that initial text alert goes out, first responders know where they're supposed to be because we've drilled that scenario and people who are responsible for the other communication channels basically begin repeating the messages that are coming from police dispatch to the community.

Communication managers also worked with other emergency response personnel in between times of crisis to prepare for the scenarios that may occur during a real emergency. In addition to extensive system tests, which are discussed in greater detail in RQ2, teams of experts from multiple divisions within the institutions collaborated to craft sample text messages to address a variety of likely emergency scenarios that could occur on their campuses. To reduce the response time needed to create and send an alert, as well as to minimize transmission errors such as exceeding the per-message limit of 160 characters, all participants in this study reported working with other emergency response divisions to draft pre-planned scripted message templates containing blanks to fill in relevant details of a number of crisis situations, such as the location of the event and directives of desired audience behavior.

Testing Emergency Notification Systems

Through RQ 2, the researcher examined how higher education institutions test their emergency notification systems.

Procedural elements of system testing.

Administrators at all of the institutions represented in the study reported conducting routine tests of their text messaging systems, although the frequency of testing varied from once a year to several times a semester. Several study participants acknowledged that in the event that a real-time crisis situation triggered the crisis communication plan to be enacted, data from such an event may be assessed in lieu of deploying a subsequent scheduled test of the emergency text

messaging system. One administrator acknowledged the importance of ongoing testing when stating that “*even though we test on a monthly basis, during crisis that’s not to say that we won’t have problems.*”

At each institution, campus communities were notified in advance through other communication channels that the text messaging system was being tested and that a real emergency was not taking place. The actual test messages restated that a test was being conducted and several institutions included instructions on how to report positive or negative feedback to the communication team. Subsequent analysis afterwards included reviews of both internal system performance reports as well as external feedback from system subscribers. Data provided by the system software included metrics such as how many messages were sent, how many bounced, delivery speed, among others.

Analysis of test results.

Administrators of emergency text messaging systems use system tests to simulate deployment of the system in a real-time crisis. Highlighting the importance of such trial runs, crisis managers use insight gained from the errors observed during system test, recognizing that improvements are made as a result of “*preplanning and anticipation and thinking about what could go wrong.*”

In addition to system reporting, some administrators also solicited recipient feedback by providing contact information and asking questions about the performance. From their subscribers’ feedback, administrators have been able to isolate performance problems to recipients that bear similar characteristics, such as repetitive problems with particular service providers and individuals having calls forwarded to other numbers.

One school reported conducting anecdotal testing on random samples of recipients to generalize and validate the feedback results and to identify and investigate both isolated and widespread problems. He explained that their feedback process included “*taking data from a cross section of people and asking about the time they actually received the message on their device and then compared that across the board*” to reports from the statistical data. In some cases, subscriber feedback informed administrators that they were doing a good job, as many people also left positive comments indicating that the message was appreciated.

However, most of the schools included in this study did not report actively soliciting information or personal accounts from message recipients after a test, instead relying primarily on data reported by the system itself. One participant highlighted a troubling issue with relying solely on the software’s reports when he described receiving inconsistent system-generated statistical data, stating “*quite honestly, the company that we’re working with, I don’t know if I can trust their reporting software.*”

Revision of the crisis plan.

System tests not only afforded the opportunity to assess the deliverability of messages, but they also revealed minute procedural glitches that would hamper the speed and effectiveness in which messages are delivered during an actual emergency. Referring to an instance in which a text message was delayed because the caps lock had been left on and login access was denied, one administrator noted: “*You don’t think about those things when you’re testing monthly. It’s sort of automatic what you do. But in a real life crisis situation, your adrenaline is going and you’re not thinking clearly.*” Another discovered that their text-to-voice command was improperly translating the university’s initials into an actual word, thereby prompting them to type spaces between each letter before sending the alert.

Ongoing and routine system testing benefitted institutions by first enabling them to work out large scale conflicts, followed by subsequent resolution of moderately inhibitive issues. Initial system testing exposed conflicts at the macro level that prevented large quantities of messages from being delivered, such as messages that were perceived as spam and blacklisted by cellular carriers for extended periods of time. Subsequent testing exposed inefficiencies and conflicts specific to the campus and its crisis plan. For example, one campus, while directing students to view the university website for more information, inadvertently exceeded the character limit and thereby used a link-shortening service to comply. Such minor conflicts were often easily corrected, but they were also discoveries that, had they occurred during an actual crisis, could have cost valuable time.

Audience Expectations

RQ 3 asked what, if any, prevalent gaps exist between audience expectations and actual practices. Since actual students, staff, and faculty members not affiliated with the crisis response team were not included in the interview sample, the results for this question were derived from data collected in the document analysis as well as perceptions of the phenomena noted by the crisis managers obtained during the interviews.

Establishing reasonable audience expectations.

Evidence from the document analysis as well as the interviews illustrated that the Virginia Tech event was often recognized as the modern catalyst that changed people's expectations of what information should be available in response to campus emergencies and how it should be provided. Paired with the popularity of this medium among students, one administrator noted "*students coming out of high school expect to receive text messages because that is what they are used to.*" Several interviewees noted that the modern public discourse on

campus crisis communication seems to revolve around text messaging, a point with which one participant took issue:

I would say as a public servant, as an educator, I think that one of the great messages that higher education, the public needs to get out here and understand is that text messaging isn't the panacea to make you safe in all circumstances. It sort of scares me to think that when the public lay discussion of emergency notification occurs, it all goes back to text messaging, as if that's the only way that people are going to be saved, and that couldn't be farther from the truth.

Several of the schools represented in this study emphasized the importance of training the audience not only in how to subscribe to the emergency text messaging system, but also in what types of messages will be sent through which channels. One interview participant summarized the dual nature of audience perceptions:

In the instances that it has worked, we've had really good feedback, and people have said "I was able to take precaution," "I'm glad I had this information," "I live in this area and I wanted to know that there was a person with a gun seen in the area," or "I had a class scheduled in this building and I was glad to know that the building had been evacuated." But again, when it doesn't work the way it's supposed to and people aren't getting the messages or the time is delayed, then people are really looking at this as though this is the way that I expected to get notified and I didn't, and they're really looking to find out why.

Of the crisis managers who actively engaged the community in establishing reasonable expectations, such tactics included sessions at new student and parent orientations, email communication, descriptions on the subscription webpage, as well as instructions during system

testing. Administrators wanted to clearly outline proper uses of the system, informing students that *“they sign up for the text messaging with the understanding that we would not use it for routine information, but only for very serious emergencies. We have held true to that and it has been pretty effective.”*

Ambiguity in the Clery Act.

While the intent of the previous participant is clear, several administrators indicated that determining what is classified as a *“serious emergency”* has proven to be difficult. The vague nature of the notification guidelines set forth by the Clery Act has contributed to the inconsistencies in determining when to deploy emergency text messaging systems versus other communications channels, and in turn has exacerbated the gap between audience expectations and actual practices. One interviewee stated that although the legislation’s key phraseology defines *“timely warning”* and *“emergency notification”* as distinct components, the guidelines don’t essentially clarify what the difference is or the qualifications or specifics of either term, and the legislation does not give any instructions regarding what channels must be used to disburse various messages.

The general sentiment of the managers questioned in this study was that the text messaging system should be limited to use during true emergencies in order to make bigger impact upon the audience in a life or death situation, but the cumulative data indicated a great deal of variance in the scope of what circumstances administrators believe constitute a true emergency.

We have two kinds of alerts. We have an immediate notification alert, which is a notification that goes to everybody that relays an incident that is a physical assault or something that alerts members that there is an imminent threat to the

campus community. Then we have a timely warning, that's the other piece of it. Timely warning represents a potential but not necessarily imminent threat to campus. That can be something that happens off campus but near campus. So, if there is somebody who has been spotted off campus who may have a weapon, and they did something a few blocks off campus but they have been seen heading toward campus, then we issue a timely warning with the alert system as well. And that basically just tells people to be on the lookout. Be watchful. Look for a person that fits this description and that kind of thing.

Noting that other channels may be more appropriate to send out Clery Act warnings, one administrator stated that *“there needs to be an immediate threat to the health and safety of people,”* while another extended this thought in saying that *“we only use it for episodes where there is a potential immediate threat to health and safety. We don't use it for instance for Clery Act warnings.”*

Complaints and perceptions.

Analysis of the data revealed that complaints in recent years are less about technology failures than they are about communication response decisions, specifically what information is included in the message and when the institution elects to send them. Despite the efforts conducted by campus personnel to illustrate how various communication channels are intended to be used during an emergency, recipients' subjective opinions can differ greatly over the same piece of information.

While most people were grateful to receive the alerts, others complained directed to the text messaging administrators for sending out too many messages during ongoing situations such as severe storm activity: *“There have been some people that have been annoyed with the text*

alerts because they don't want to get them in the middle of the night, or there are times that they are off campus and it doesn't affect them.” One participant responded to this critique by saying that “we get some complaints about receiving the same message via text, email, voicemail, etc, but I tell them that you could be at any place, and most people understand why we're doing it that way.”

To the contrary, administrators also received complaints for not sending messages during certain events or to specific audiences. One participant defended his position in not sending out a weather-related campus closure notification when stating that *“our responsibility is to put out information for people to take precaution for their safety, not to cancel classes for a weather related event.”* Several schools were also criticized for excluding parents from the text messaging system, and they tried to use these opportunities to explain to parents what other forms of notification are available and where they can find information. Participants repeatedly cited pressure to allow parents to subscribe to their text messaging service:

When we established [our] alerts, we set it up so that it was only available to students, faculty, and staff. Period. Not parents, not spouses and boyfriends and girlfriends who live in other places. Only to the people who we're trying to reach. And some parents have a real problem with that, and they said “I want to know if there's something going on on your campus. I want text messaging too.” The fundamental concern with that, number one, “Is the emergency notification system an emergency notification system and information system?” We say no. We say we only use these tools for emergency notification, not for providing information. And the second thing is, as I mentioned before, 40,000 users, 75,000

points of contact, you add parents, divorced parents, spouses, all that kind of good stuff, and you are slowing the system down.

In addition to an expectation gap in what messages should be sent, the public perception of emergency text messaging's performance is often based on a lack of understanding of the technology, and opinions regarding its inadequacy are often incorrect. An administrator of a system with 40,000 subscribers noted that *"the assumption is that the text message is instantaneous, and if you really analyze the technology and the flow and the data and the size, it can be challenging. And again, at a small liberal arts college with only 2 or 3,000 people, text messaging's going to be way faster and it may be a better option."* As one school reported receiving complaints one minute after an alert message went out, the criticism can more likely be attributed to the speed in which the administrators released information rather than a criticism of the text messaging system's actual performance.

Interviewees stated that because audiences are so comfortable with traditional text messages, they incorrectly impose the same standards of performance upon emergency notifications, feeling as though it is the same as sending text messages between friends. The public's lack of understanding is best described in its assumption that text messaging is instantaneous: *"The end users expect the text message to arrive immediately because they're accustomed to texting their friends and having it arrive immediately. They're not texting 30,000 of their friends all at once, but nevertheless when we've done testing and asked for feedback on whether or not it took too long, we start getting complaints one minute after it went out."*

Crisis Communication Managers' Perceptions of Emergency Text Messaging

The data obtained while exploring RQ 4 offered insight concerning what campus communication managers perceive to be the strengths and weaknesses of using text messages to

communicate with campus communities during times of crisis. Some hailed emergency text messaging as being the most effective means of communicating crisis-related information to the largest group of people in the shortest amount of time, while others cited its limitations to emphasize the importance of creating a layered approach within the crisis response plan.

Expansive reach of emergency text messaging.

The most frequently cited benefit of using emergency text messaging described by communication managers primarily revolved around its ability to relay information quickly to the largest number people on and off campus. One institution reported that a recent internal survey showed that 98% of all its students have a cell phone, demonstrating the broad reach that cellular technology can potentially lend. Participants described the technology as *“the most consistent method, the one that will reach the most number of people with the same message, is our text messaging system,”* also stating that *“it is a way of reaching students through a format that they are using all of the time and it increased the likelihood that they would get the message than if we just sent it to a university email that they would have looked at once a day.”*

The reach of text messaging was stated to be greater among the student population than traditional communication channels, especially considering the limitations during actual class times, and emergency text messaging systems are extremely effective in serving as a catalyst to drive attention to the other tactics. The reach of the system promotes the message to spread among other forms of channels such as word of mouth, phone calls, and now social media. Regarding the effectiveness of using emergency text messaging to reach college students, one communication director stated:

They always have their phones with them. It is a way of reaching students through a format that they are using all of the time, and it increases the likelihood that

they would get the message than if we just sent it through a university email that they look at once a day. I think in some situations, especially like a lockdown where they need to know information immediately to make a decision, having that text messaging, even if you're driving them to a website, is pretty effective.

Although the message can become skewed as it farther removed from its original source, the widespread nature of the discussion directs the community's attention back to other official channels within the communication plan, such as the university website or email.

When comparing evidence from the document analysis to that in the interview transcripts, the researcher observed improvements in the technology's performance related to the speed in which message cycles were completed. Historical accounts from the earliest implementations of emergency text messaging systems documented a number of incidents in which messages either took upwards of 20 minutes to reach their destinations or were not delivered at all (Lipka & Hoover, 2007; Young, 2008). By contrast, most of the study's participants commended the current speed in which text messages are delivered, making statements such as *"from our perspective, it is currently the most rapid form of communication that we've got"* and *"the pro of text messaging is that you reach a very large number of people pretty much all at once."*

One participant described an experience during a hurricane in which *"there was a period of time when it was almost impossible to get anything through to this area code, but the one thing you could get through was text messaging, which was the main reason that drove us to use text messages as our emergency notification system."* He also qualified that under extreme circumstances the delivery speed may not have been ideal in that messages may have remained in a pending state on a mobile device for five minutes waiting for an open circuit, but was

pleased that the messages were transmitted “*as opposed to trying to redial and redial and redial, and then you finally get through, and when you get through you can talk for four and a half seconds and then you get cut off again.*” In this instance, text messaging proved its ability to perform when other mechanisms fail, particularly when the communications infrastructure is impaired or overloaded.

Another administrator agreed with this assertion that during a major severe weather event, when cellular phones failed and many people were denied access to email due to power failures, text messaging was one of the only forms of communication that actually worked:

I think that one of the other advantages of text messaging is that it can still work when your infrastructure goes down. If you've got a university computer and the electricity goes out, you've got a huge problem. But when you're dealing with wireless and cell towers that can still get your message through, text messaging can be very effective.

The messages may not have gone through instantaneously, but because the technology uses burst transmission, the moment a single point of connectivity is available, the messages that had been being held are transmitted. Participants also noted that third-party vendors purposely create redundancy in the support network to ensure uninterrupted system access: “*If for any reason our infrastructure goes down on campus, it immediately switches to another one hosted off campus in a different state.*”

Limitations of emergency text messaging.

Though all of the study participants agreed that the benefits of using emergency text messaging outweigh the risks, the technology is not without limitations. Noting the vulnerability imposed by the chaotic variables presented during an emergency, one administrator stated:

In the past, we've not found it to be the most reliable method of communicating with people, so we've taken a layered approach for the notifications. It's only as effective as the technology it's bound to, so we've always been concerned about saying this is our primary way of sending the messages out.

Several respondents acknowledged the challenges presented by the brevity the message length when using this technology. Text messaging requires a limit of 160 characters before the alert is truncated into two separate messages, which would double the amount of data being sent and risk interfering with deliverability speed. Interviewees noted that fitting an alert title, details about the event, instructions to take action, and references to other channels into such a limited space can be difficult: *“Once the alert is issued, it will just say ‘shooter on campus’ and then you have to wait until the next message that says it’s in a certain part of campus.”* As a side note, one communication director expressed that this limitation within the technology inadvertently benefitted the overall crisis plan when stating that it forced them to craft a clear and concise message with only the essential information consisting of *“the bare minimum that people need to know to make decisions.”*

Other limitations listed by the subjects related to technical aspects, including the previously-discussed difficulty in obtaining and maintaining reliable contact information in the database, as well as challenges in increasing volume thresholds as subscription rates grow. Though less of an actual problem with the technology and more of a reflection of economic hardship, one administrator described his experiences with budgetary limitations inhibiting technological advancements: *“There was a time when we worried about enrolling people because of the system capacity and we sort of got beyond that bump, but I think it’s a continued*

challenge to try to build enough capacity, because capacity costs money, and public universities are seeing state funding dwindle.”

Dependence upon third-party providers.

Crisis managers’ responses to the preceding questions indicated a desire to promote order and control among the chaos and uncertainty presented during an emergency. Acknowledging that crises do not unfold in a linear or predictable manner, the testing and planning already outlined demonstrated the steps that higher education institutions take to minimize disorder so that administrators can focus on true variables over which they have little control.

One of the primary factors upon which crisis managers are dependent in their communication response is the performance of third-party service providers such as the software vendors and the cellular phone carriers. Participants noted numerous instances in which message delays occurred outside the boundaries of the institutions’ control:

No service provider is going to be able to guarantee you from the time it leaves ours to the time it actually gets to your phone. That’s beyond the scope of what they have control over.

I have heard, for example, in our active shooter situation that one of the cell carriers had held the messages when they came in because it was such a large number all at once, and then they opened it up once they realized what happened.

In the beginning with our original provider, we had some significant problems with times in that it was taking over 20 minutes for the text messages to get out,

and that was substantially longer than what the vendor or service provider had been telling us.

Most of the delay in text messaging is actually in the service provider. It's not in my emergency management system. It's the cell phone provider.

There were problems that some of the service providers didn't have the system for the text on what they referred to as a whitelist. Some of the calls were actually being blacklisted that should not have been.

Fortunately, as noted in the preceding statements, most of the third party issues described in the interviews were eventually resolved as a result of rigorous and ongoing system testing. However, as crises unfold, communication managers remained keenly aware of the fact that certain elements remain out of their control in their unavoidable interdependence among third party providers.

Technological improvements.

Though many institutions rushed to adopt text messaging into their crisis plans following the Virginia Tech tragedy (Foster, 2007), all of the interviewees agreed that the performance of emergency text messaging has improved since it was first introduced on campuses. Their general estimation of the enhancements indicated that *“the technology is changing and coming along. It's gotten faster, and it's got more volume capability to it.”* Another manager who recently migrated to a new text messaging platform supported this belief based on current information: *“I know the technology has gotten much better because I just went through the bid*

process for this new system, and they were explaining to us why everything was gonna move much faster.”

Contrary to early reports noted in the document analysis of messages not being sent (Hooever & Lipka, 2007; Young, 2008), most of the participants did not believe that system overloads are much of a problem with modern technology, stating that originally *“there were some limitations, but I think there’s less of that.”* One participant reported that *“we had no failure even when we tried to crash it, either in a real situation or in a test,”* while another administrator, who had recently removed email and voice mail management from the system, explained that *“when it’s just text messaging, it’s pretty instantaneous; I want to say within a few minutes, less than five.”*

Transmission delays continue to occur, though schools reported that the messages on the late end of the spectrum were the exception rather than the rule and were usually explained by a factor not related to the messaging system itself. Most problems were reported by study participants as being due to rare anomalies that do not apply to the bulk of subscribers, with one participant noting that *“the reason that I say that is because we tend to see the same companies with issues.”* Several participants stated that typically 95 percent of all messages are delivered within the standard 2-3 minutes, and of those ranging in the higher 10-20 minute range, most problems could be attributed to outdated or incorrect information provided to the database, isolated cellular service provider conflicts, and other third party interdependencies.

Most administrators reported no problems with volume and deliverability, but, as previously discussed, acknowledged that limiting subscribers and purging data is essential to promoting peak performance. Study participants expressed mixed opinions regarding to what extent the size of the database effects deliverability speed. Most agreed that text messaging can

be the fastest notification method; however, it is important to note that the one school claiming it was the slowest form of communication maintains a database of over 40,000 contacts and also uses a hybrid system that sends emails and voice alerts, bringing the cumulative data point total to over 100,000 simultaneous messages.

When judging the effectiveness of delivering emergency messages through text messaging, it is important to differentiate the delivery speed of a particular channel from the overall retrieval rate among recipients. Several schools reported that strictly speaking to deliverability, text messaging was reported to be more reliable than voice messaging through telephone outlets but less effective than email, which can be deployed quickly and transmit unlimited information. One participant referred to a study that revealed that upwards of 90 percent of all text messages are read within three minutes of being sent and noted that it is a preferred method of communication for many people, particularly in this target demographic. Administrators acknowledged that the amount of time that lapses between when an email is sent and the recipient actually views the email, particularly among students during instructional hours, further highlighted the effectiveness of including text messaging in the emergency response plan. Similarly, nearly every time an interview participant cited a limitation of using text messaging during emergencies, the statement was countered with an explanation that routine system testing and establishing redundancy within the crisis communication plan adequately filled these gaps.

Discussion

Consistent with the grounded theory methodological approach, upon completion and transcription of the interviews, the researcher conducted an exhaustive final round of selective coding to determine which themes among the data presented the greatest level of salience. As

such, the researcher identified one dominant idea among participant responses and the document analysis that provided the greatest amount of explanatory power regarding the practical and theoretical implications of this study (Charmaz, 2006).

Dominant Themes

The axial themes already identified in the results were repeated throughout the in-depth interviews and the document analysis, but thematically they all pointed to a central premise. Based on communication managers' perceptions of the efficacy of using text messaging to disburse crisis-related information during an emergency, the principle theme to emerge through selective coding as a result of the questions posed in this study was that crises are situational and vary in their predictability. As such, the non-linear state of chaos that occurs during a crisis requires a flexible, yet deliberate, crisis communication plan capable of adequately responding to a variety of variables.

Multi-channel communication response.

Every form of notification has strengths and weaknesses, and they are often situational in nature. Factoring in the primary communication issues faced by institutions in crisis, one manager stated that *“the two most compelling needs were speed and breadth. We really have to be fast to get messages out to people, and we have to get them out as broadly as we can.”* Participants established the need to create redundancy in the crisis communication plan by referring to a number of instances in which one communication channel may be more effective in certain given circumstances than others, and vice versa:

Let me just explain. Every form of notification has, if you will, strengths and weaknesses. For example, if you're walking across our campus quad, you know, our drill field. It's a beautiful spring day like today is. Today's

'reading day,' by the way, so you know people are out enjoying the sunshine. And if there's an emergency and the system is activated, you will hear those outdoor sirens before you hear or know about anything else. If you then walk inside to our limestone-clad buildings to get a cup of coffee, those outdoor sirens cannot pierce many of our buildings, and sometimes cell phone service cannot pierce many of our buildings, i.e. the text messaging. So the way you might hear about the notification first is maybe it calls your cell phone... well, that may not work. You might see one of the public display signs at the café, the LED boards, so you might hear about it that way first. So the point is, we have a dozen different ways to notify you. Recognizing that depending on where you are, and what time, and what you're doing, all that kind of stuff, you're going to hear about it first. Again, every system has pluses and minuses.

Other study participants cited a myriad of additional situation applications of crisis communication tactics: at outdoor events such as football games or concerts, people might hear sirens or loudspeakers before anything else. Faculty and staff members are more likely to be seated at a computer to be able to receive desktop alerts, and likewise, students in classrooms whose professors have implemented cellular phone restrictions might see a public display sign first. During overnight hours or for individuals actively in transit while commuting to campus, text messaging may be the only means of reaching individuals with time sensitive information. *"Given all those potential variables," a participant stated, "text messaging may be very ineffective if we need to act immediately, which is why we have all of these other systems happening simultaneously."*

In any of these cases, as well as the infinite possible scenarios that may characterize a crisis, administrators repeatedly noted that the layered approach to communication response allows these channels to work in tandem with one another to ensure that as many people as possible receive the desired information. Reiterating the choice of tools used by crisis managers based on the appropriateness of a given situation, a study participant explained that *“the goal would be to send an initial text message, perhaps another if we felt that we needed to warn students of another danger. The website would be what we primarily use to really drive home information. In addition to that, we’ll use social media, primarily Facebook, and we might to an email blast depending on the situation.”*

In their responses every participant alluded to the general sentiment that emergency text messaging is an integral piece of a multifaceted communication response. Specifically, one administrator said:

I’m very impressed with the way that the technology has brought the time down, but text messaging is definitely not the final say on how to make your notifications. I think it’s an important component, but I really think if you’re going to best serve your community, you’ve got to have a layered approach to being able to do notifications. There are a lot of ways that we look at to be able to push messages out, and text is just one small portion of it.

Deciding when to deploy the alert system.

A second prominent theme that emerged among the data as part of the selective code that crises are situational and vary in their predictability was the situational nature of the decision of which scenarios constituted a *“true”* emergency, thereby warranting a deployment of the text messaging system. Overwhelmingly, such decisions were largely based on the frequency,

immediacy, severity, scope, and longevity of a crisis situation. In the simplest sense, the primary basis of the decision to disburse a mass text notification was universally the confirmed risk or danger to members of the campus community, and was succinctly described by one administrator as *“any immediate threat to the health and well-being of people on campus.”* As such, the schools included in the study unanimously agreed on the unpredictable context that required people to shelter in place, such as active shooters, earthquakes, and tornadoes.

However, the decision to deploy the system in other situations was left to the administrators’ interpretation of the threat, and the data revealed disagreement among the schools over events that did not meet the shelter in place criteria. One administrator asserted that *“our view is that whenever there’s an incident of any kind, just put out whatever information we have, even if it’s incomplete. Even if we don’t know, we feel that the quicker we can get information to people, the better.”* General information about moderately predictable weather related events such as snow, ice, and hurricanes was often reported through permanent channels such as the university website or phone hotlines. At the point in which the weather caused a subsequent event posing a specific threat, the text messaging system was occasionally deployed to warn people to stay away from a particular area on campus.

Compelled by the desire to remain in compliance with the Clery Act, several administrators reported sending out superfluous text messages because the language of the law does not clarify how and when alerts must be communicated. Situations such as bomb threats or chemical spills required subjective decisions because, as one administrator stated, these events happened frequently enough that deploying the system for a false alarm or for something that can be contained quickly could have caused unnecessary panic and chaos. Another communication director interpreted the *“immediate and continuing threat”* language from the Clery Act to not

send messages out during such instances, at least through text messaging, when the threat is no longer perceived to be continuing. As discussed previously, still wanting to provide information under compliance with Clery, institutions often chose other traditional channels to later apprise the university community of relevant information rather than gratuitously deploying the emergency text messaging system.

While careful construction and testing of the crisis communication plan improves the overall success of the response, pre-crisis preparation only accounts for a portion of the outcome. The predominant themes that surfaced upon analysis of the data indicated that due to the unpredictable nature of crises, even the most rigorous crisis planning cannot account for every scenario and that some decisions must be made based on the sound judgment and expertise of communication professionals as well as past experiences in relevant situations. As one participant stated, for each unique set of circumstances, “*you have to analyze the community you’re trying to reach.*” Analysis of the responses regarding the use of emergency text messaging from study participants, who were comprised of senior level communication and law enforcement administrators at colleges and universities throughout the United States, revealed practical implications for public relations practitioners as well as theoretical implications for public relations scholars.

Theoretical Implications

In as much as Coombs’ SCCT model and Benoit’s image restoration theories have become a paradigm for post-crisis communication response and recovery strategies, crisis communication literature is virtually devoid of substantial research addressing the issues organizations address before and during a crisis. A comprehensive review of crisis communication research published from 1991 to 2009 revealed that the disproportionate amount

of scholarly work dedicated to these approaches has resulted in practical and theoretical gaps that necessitate increased diversity in future lines of research (Avery, et al., 2010). While Coombs' and Benoit's work provide directional value for organizational success following a crisis, they do so with a reputation-centric mission and fail to acknowledge the contemporary mindset that excellent public relations results from simultaneously acting in the best interest of the audience.

With this in mind, the researcher used grounded theory to analyze the data "until a theoretical theme [was] developed which can link facts in a comprehensive and coherent way to present a clear portrait of social reality" (Loosemoore, 1999, p. 11). In this study, the data collected in the interviews were categorized using the constructs of open, axial, and selective coding. Open coding, which was conducted at the line-by-line level for each transcript and article, after which the natural progression of qualitative data analysis then moved from open coding to axial coding, whereby prominent themes present in the document analysis and interview transcripts were classified under larger categories by comparing common characteristics. The final stage of selective coding required a comprehensive analysis of axial codes to determine which categories achieved greatest salience, and only those with the most explanatory power were ultimately included for discussion (Charmaz, 2006).

Through selective coding, the researcher determined and has already discussed that the primary theme present in the data described the situational nature of crisis communication. However, during the process of axial coding, the researcher observed several additional key themes recurring frequently among the data that bore specific resemblance to theories that have recently begun to be explored more often in public relations research. The axial terms "*non-linear*" and "*uncertainty*" fit well within the principles addressed by chaos theory, while the terms "*collaboration*" and "*interdependence*" can be applied to the ideas present in power

theory, and the newly-emerging complexity theory combines concepts from both theories to address the in-crisis issues neglected among popular public relations theory such as image restoration and SCCT.

Chaos Theory and Crisis Communication

The document analysis revealed an instance in November 2008, more than one year after the fatal shootings of 2007, in which the Virginia Tech campus experienced another large scale test of its emergency communication plan when the sound of gunshots, later proven to have come from nail-gun cartridges, was reported near campus residence halls (Young, 2008). Although the episode turned out to be a false alarm, it provided a real-time test of the effectiveness of revisions that had been made to the crisis communication plan in response to the 2007 massacre. Campus officials concluded that the majority of new alert systems, which included alerts distributed via LED displays, computer desktops, email, and the university's homepage, worked as expected and improved in-crisis message distribution. However, the third party system for sending text messages to mobile devices crashed during its first in-crisis deployment and failed to deliver messages to the nearly 30,000 VT Alerts subscribers (Young, 2008).

This instance illustrates the importance of further extending public relations theory beyond crisis planning and image restoration concepts. Even the most rigorously prepared crisis plans remain vulnerable to unforeseen variables, and the emerging areas of chaos theory address the gap of communication research that exists between existing pre-crisis and post-crisis communication research. Results from this study demonstrate the value of using chaos theory in studying crisis communication and demonstrate a need to extend the theory in public relations literature. A study participant summarized his experience with crisis planning by stating that

despite repeated testing and planning, “*you can’t eliminate the sort of chaotic element entirely in any emergency because there’s just a whole lot going on. But you can manage it and control it in a way that people can get useful information.*”

Under the constructs of SCCT and image restoration theory, crisis communication managers are given little guidance regarding how to proceed during a crisis. As a crisis event unfolds, information and circumstances regarding the ongoing situation change rapidly. Due to the innumerable variables governing a situation, a finite course of action is often impossible to predict (Gilpin & Murphy, 2010). Recognizing that predictability and precise planning is counterintuitive to the erratic nature of crisis, chaos theory has recently begun to emerge as a prominent theory in crisis communication literature (Coombs and Holladay, 2011; Cottone, 1993; Freimuth, 2006; Seeger, 2002; Sellnow, Seeger, & Ulmer, 2002; Vanderford, Nastoff, Telfer, & Bonzo, 2007).

History of chaos theory.

The roots of chaos theory originate from a meteorological study in which weather patterns were discovered to not always develop as scientific models predicted and did not repeat their previous history, despite being studied over long periods of time (Lorenz, 1963). Lorenz (1993) stated that the definition of the word *chaos* has evolved from its ancient meaning denoting “a complete lack of form or systematic arrangement” into a more modern definition “used to imply the absence of some kind of order that ought to be present” (p. 3). He expanded this definition to apply to subsequent scientific studies by using chaos to refer to processes “that appear to proceed according to chance even though their behavior is in fact determined by precise laws” (p. 4).

In his subsequent studies, Lorenz (1993) sought to prove that small amounts of randomness existed within moderately predictable systems and that even traditional scientific research of common phenomena are still studies of approximations. Similarly, a 2002 study by Sellnow, Seeger, and Ulmer of epic flooding of the Red River in 1997 substantiated this assertion by documenting how traditional scientific methods of measurement could not adequately account for the complexity of such unprecedented severity. One crisis manager interviewed in this study acknowledged having similar experiences with well-prepared crisis plans and explained how though the exact details of an emergency may fluctuate, there are still fundamental response techniques that can be followed:

You know, every incident is different and you obviously hope that people will take it seriously because in the case like that as our police chief has said, and I think this is really very astute on his part, he said in every situation, there is going to be a time of chaos. And the chaos comes from not knowing. It isn't that people are running helter skelter going crazy, it's mental chaos where you don't really know. You don't know the facts. You don't know whether the person has a gun, a knife, or whether it was a cell phone in his hand. But the behavior was suspicious enough that we wanted people to take precautions and be careful.

Lorenz (1993) distinguished a deterministic sequence, in which only one outcome is possible, from a random sequence, in which several possible outcomes may exist, but he also noted that randomness does not necessarily predicate that an infinite number of possibilities exist. In this sense, Lorenz advanced chaos theory from claiming absolute unpredictability and made it useful to the scientific community by acknowledging that degree of predictability can exist within a relative set of unpredictable circumstances.

Modern applications of chaos theory.

Though the principles of chaos theory are grounded in the physical sciences through studies popularized in the 1970s (Lorenz, 1993), chaos theory has more recently been applied to the social sciences in the 1980s and later to public relations and specifically crisis communication in the 1990s (Freimuth, 2006; Horsley, 2010; Murphy, 1996; Sellnow, et al., 2002). Seeger (2002) asserted that the flexibility afforded by chaos theory complements crisis situations, which are typified by a series of complex non-linear systems. He maintained that tenets of chaos theory “emphasize the lack of predictability in system behavior, unexpected and non-linear interactions between components, radical departures from established normal system operations, and ultimately, the re-emergency of order through natural self-organizing processes” (p. 329). In agreement with Lorenz, scholars have stated that the merit of chaos theory is that allows the organization to formulate a degree of predictive understanding, expanding beyond existing deterministic models with enough flexibility to respond to unpredictable variables (Seeger, 2002; Sellnow, et al., 2002).

The administrators interviewed in this study demonstrated recognition of these principles in their preparation for emergency communication on campus in their emphasis on a multi-layered communication plan, as well as the inclusion of pre-scripted message templates. One manager described a plan in which “*we have various crisis situations mapped out and we have different types of responses and media that we will use throughout the course of a crisis, two, three, whatever. And text messaging figures in as one of those pieces. It’s not the only one. It’s not used for everything.*” By preparing for several different likely outcomes related to a potential crisis, crisis managers are somewhat able to control the chaos by providing a general deliberate framework within which to accommodate the unpredictable variables.

A participant in this study echoed Seeger's assertion when referring to the challenge of channeling prior experience and preparation to make sound decisions during a crisis:

In every situation, there is going to be a time of chaos, and chaos comes from not knowing. You don't know the facts. We err on the side of caution because we figure that the inconvenience is worth keeping people as safe as possible. The period of chaos is really apt observation and cannot be prevented, because there are going to be times when you don't know all the facts.

Multiple communication managers stated that text messaging, even with limited information, can curb chaos by providing an official source from which people can obtain information and spread to others. *"In any emergency, there is an element of chaos. You have sources of information coming from different directions. You've got rumors. And my view is that when you're in that context, you're just trying to put order on the chaos."*

Chaos theory acknowledges that even the most stringent testing will not account for every possible variable, and in crisis situations, in addition to all of the situational variables that occur during a crisis, human error adds an additional level of complexity to an already unpredictable situation. Referring to an instance in which a text message was delayed, one administrator described momentary panic that ensued while not being able to log in to the text messaging system because the caps lock had been left on by a previous user: *"You don't think about those things when you're testing monthly. It's sort of automatic what you do. But in a real life crisis situation, your adrenaline is going and you're not thinking clearly."*

Bifurcation and emergent self-organization.

Lorenz (1993) contributed fundamental legacies through his work on chaos theory with his concepts of bifurcation and emergent self-organization. Each of these terms can be

seamlessly applied within crisis communication research as they address the essence of the realities experienced by an organization in crisis. Lorenz referred to bifurcation as the abrupt event or change in a system which, in the case of crisis communication, throws the organization into a state of emergency. Horsley (2010) maintained that bifurcation shifts from normal organizational operations into deployment of the crisis plan, in which the traditional hierarchy is replaced by a disaster response structure.

Obvious examples of bifurcation points in the data included the emergency events that triggered a crisis response, such as tornadoes, hurricanes, ice storms, active shooters, and chemical spills, all of which shifted the institutions from normal operating mode into a restructured organization hierarchy and value system designed to address the altered roles and functions necessary to address the crisis. However, on a larger scale, the benchmark events of Virginia Tech can also be viewed as a bifurcation point for the field of campus crisis communication as a whole, in which institutions departed from complacency with existing procedures and were forced to reflect upon the adequacy of their own practices.

Higher education institutions' reaction to the this self-reflection embodies Lorenz's concept of emergent self-organization, which was described by Seeger (2002) as "a natural process whereby order re-emerges out of the chaotic state brought on through bifurcation" and "characterized as the antithesis of chaos" (p. 332). The data analysis revealed that within six months of the Virginia Tech shootings, hundreds of institutions had contracted third-party vendors to provide emergency text messaging systems on their campuses (Foster, 2007). Interview results, mentioned in greater detail in the results section, support the idea that the mass-migration to this technology was motivated by analysis of the tragedy with statements such as:

The spotlight is shined more brightly on campus safety as higher education lost its innocence in 2007, and rightly or wrongly, fairly or unfairly, Virginia Tech is the bellweather pole on all of this stuff.

Another communication manager who was in the process of soliciting third-party text messaging companies for the purpose of sending out social notifications of campus events cited that “*it was only after Virginia Tech where everything turned toward, away from social kinds of things more to emergency notification, and that’s where we target our efforts.*” He continued to explain how this landmark case marked a change in the attitudes among higher education communication professionals:

I think we’re all faced with things that we never thought we would have to be faced with. I mean, I’ve been here for close to twenty years. This was never ever even a consideration. I mean, you know, we talked about crisis management, but that was like ok we’ve got somebody who’s got a little bit of scandal brewing – we’ve got to kind of position the message, and we’ve got to try to help shape the written and spoken word. But as far as actually being directly involved in possibly saving lives? Gee wiz, I mean, I don’t wear a badge and I’m not a law enforcement officer, but you know, we play a role in communicating with people to help keep them safe.

The bifurcation point of the Virginia Tech crisis and emergent self-organization of the higher education community in its willingness to adapt existing procedures offer explanatory power to an area of crisis communication that public relations scholars have just recently begun to develop, and they provide an excellent transition into the more common lines of research aimed at directing organizations upon the conclusion of a crisis.

Impact of Power in Crisis Communication

In this study, the influence of power was present on several levels among relationships with communication managers at the institutions of higher education, including those with message recipients such as students and employees, with parents and other parties affected by campus events, with third-party entities such as software vendors and cellular service providers, internally with administrators in other divisions within the institution, and externally with government agencies that monitor legislative compliance. Summarizing how these various divisions work together and share power for the public's benefit, a public relations manager stated that *"it takes everybody working together. I mean, we work with administrators, ITD, the police, and our staff members here. We're a staff of five. We're all trained on the Rave system so we could at any given time, if I was gone or if two of us were gone, other people could send out a message if we had to."* Given that audiences construct meaning based on their own experiences, which are in turn influenced by external factors present in an environment, the element of power among involved parties plays a pivotal role within the dynamics of discourse.

Power theory in the literature.

A comprehensive review conducted of existing literature summarized power as being "the deployment of means to achieve intended effects" (Cobb, 1984, p. 483). Relationships are characterized by a pattern of related behavior among organizations and stakeholders, and the interdependence that influences their actions reflects the concept of power (Coombs & Holladay, 2007). Cobb (1984) viewed power as a form of social interaction in which one party has the ability or potential to influence or control others. His model identified four stages that characterize the effects of power between an agent and its target within the context of a given situation. Antecedent (or preexisting) conditions among the involved parties define the sources

of power, the agent's influence arouses the target's consideration, and power is ultimately manifested when the desired behavioral and situational outcomes are achieved (Cobb, 1984).

Corporations and large organizations are frequently perceived as having a power advantage over individuals because their economic resources afford them greater access to channels that generate widespread circulation of their position (Coombs & Holladay, 2007). Grunig and Grunig (1991) addressed these concerns when suggesting that the role of public relations is to create a path of least resistance by identifying the consequences of organizational goals on its stakeholders and realigning the mission to allay confrontation. While most organizations would prefer to operate autonomously, their interdependence upon stakeholders serves as a grounding force that necessitates building favorable relationships through good public relations practices (Grunig & Grunig, 1991). In the modern era of social media and mobile technology, public relations professionals now have ample opportunities to test such theoretical constructs – especially during crisis events, given the changing landscape of their publics' access to consume and produce information about their organizations.

Organizational power and trust.

The modern information environment has created unprecedented and instantaneous access to events as they unfold, further challenging public relations professionals to balance its power while maintaining legitimacy, accuracy, and transparency as they communicate with the public. Gonzalez-Herrero and Smith (2008) maintained that in the new digital environment, “trust is the new currency and people expect authentic, transparent conversation in a human voice, not company messages delivered in a corporate tone” (p. 144). Echoing Sellnow, Seeger, and Ulmer’s (2002) assertion that chaos is accelerated and extended due to the misinterpretation of feedback over a long period of time, one administrator noted that text messaging empowers

the university to send a clear, concise message from a trusted source in reaction to the frenzy of misinformation that circulates among social media outlets. The influence of trust when using a designated emergency text messaging account to disburse crisis information was described in the following statement:

I think the benefit is that it's coming from an authoritative source to the students, faculty, and staff. It's not coming from the department of marketing communications, it's not coming from the news media; it's coming from an authoritative source that's taken very seriously.

While public relations theory highlights the importance of transparency among organizations and their publics, communication professionals are often burdened with the dilemma of deciding if releasing a piece of information will cause more harm than good. A power struggle ensues when the organization withholds information with the public's best interest in mind, while the audience perceives the act as an intentional attempt to preserve the organization's reputation. One participant stated that *"our view is that whenever there's an incident of any kind, just put out whatever information we have, even if it's incomplete. Even if we don't know, we feel that the quicker we can get information to people, the better."* Others feared that overuse of the system for information that could be conveyed through other channels or reports that turn out to be false alarms can result in a desensitization effect on the audience in which critical emergency notifications are ignored.

Technology's influence on power.

From a power perspective, emerging technology represents the best and worst of what narrative theory has to offer to public relations. Organizations must now adjust their messages to comply with the expectations of highly fragmented online audiences, whose opinions through

blogs, message boards, and social media also become part of the narrative (Gonzalez-Herrero & Smith, 2008). Never before has such a large portion of the public been able not only to access the ongoing discourse, but also to make meaningful dialogical contributions.

In a modern culture accustomed to immediate access to information via the internet, social media, and other digital technology, the lay public's expectations of communication from campus administrators have risen dramatically. Particularly in light of the findings of the Virginia Tech Panel, in which the administration, believing there was no further threat, did not send out a message after the early morning shootings, ultimately leaving people to wonder if the subsequent attacks could have been prevented had more information been made available. With respect to the use of emergency text messaging during crises on higher education campuses, the responses observed in the data revealed that people feel empowered by these types of notifications, as if they could not only prevent harm to themselves but could also inhibit further damage by spreading the message using other communication tools such as social media. In lawsuit filed against Virginia Tech, the parents of two victims claimed that "if university officials had warned the campus more promptly after the earlier shootings...the young women would have taken precautions, altering their schedules (Lipka, 2012).

Distributing power among stakeholders.

With as much as effort as these institutions place into providing information to their publics, audiences also maintain a degree of responsibility in ensuring accessibility to the message. Given that all but one of the schools acquired subscribers through an opt-in service, leaving the onus of choosing whether or not to receive text messages in the hands of potential recipients. One administrator said:

Campus safety notification requires students, faculty, and staff to actively participate in it. You have to actively participate in it. You have to take responsibility in your own personal safety. So there's a very strong message in that as well. We can't just protect you and follow you 365 days a year. You have to act accordingly and sign up, and we will remind you every time you sign up every time you register for classes, but you are not required to sign up.

Although power is often construed with negative meanings, Foucault deviated from a notion of strict coercion or domination by describing it as a “versatile equilibrium, with complementarity and conflicts between techniques which assure coercion and processes through which the self is constructed or modified himself” (Foucault & Blasius, 1993, p. 204). This interpretation of a fluctuating exchange of power, which defends the ability to find mutual value in unequal circumstances, fits perfectly with rhetorical concepts supporting ideology shifts within the discourse based on the strength of the argument. In the following example, original messages are generated by the institution and circulated among its constituents:

There are other people who can opt in to the accounts, because we have interns who work at TV stations who are registered, because we have parents who are on board, because we have cousins and brothers and sisters and so forth, what turns out to be a good thing can also be a headache because you've got lots of people who instantly know that there is something happening on the campus. Because that's the case, they in turn then, well it's like the old game telephone, you know, the message gets skewed as it gets shared. And it suddenly becomes...it morphs into other things and the facts get, you know, people without knowing all the facts add their own two cents to the message.

Another participant responded to this dilemma by stating that although the dialogue may shift in focus and cost the organization temporary loss of power, ultimately receivers will reject the weakest messages and, with proper training, turn back to the institution as the ultimate source of trust:

And that's the power and I think both pro and con. That's the power of texting and the social media connection, and that's also the con of that because then your messages get diverse, they get skewed. You suddenly are doing damage control before you really even know all the facts. So, you know, that could be a downside, but I think the upside, I think they kind of balance each other.

Respondents in this study reported being conflicted about whether to send text messages in some situations, having to weigh causing unnecessary panic and chaos versus pressure resulting from the public's expectation of its right to know. The newfound sense of power afforded to audiences by new technologies affords them a sense of entitlement, even though it may be based on an incomplete or inaccurate understanding of the process. One administrator acknowledged that "*the era of helicopter parents*" has created additional hurdles in managing subscriber databases, as "*parents are a lot more involved these days in their students' activities than they used to be.*" Another administrator stated that non-student numbers are entered into the database "*sometimes to our chagrin.*" Although several participants acknowledged that they could not prevent a number from being entered, most chose to take an official stance against allowing such activity citing a desire to ensure that the people most affected by a potential crisis receive critical information.

Sharing power with other administrative units.

Power theory also plays an important role within relationships other than publics on the receiving end of emergency communication. In addition to the exchange of control experienced when communicating with students, employees, and other members of the public, communication managers also concede and gain control of decision-making with bureaucratic entities such as internal administration and external governmental agencies. They not only work with institutional personnel, but also with external units during crisis, as explained by one public relations director: *“The university participates in the emergency operations center (EOC) for the city, and so during large weather events, we’re part of the city and county-wide EOC.”*

Communication managers rely on information from first responders to *“help our faculty, staff, and students know what to do during the crisis, and it gives administration an opportunity to craft their own messages that put it all into context for the institution, because after the initial crisis is over, it’s administration who has to handle the recovery.”*

Consistent with interview statements that messages are sent out during emergencies without normal authorization procedures, Horsley (2010) pointed out that times of crisis necessitate a shift in organizational control which grants lower ranking specialists the autonomy to make decisions in response to events as they unfold without the undue burden of seeking approval from customary authority figures. A communication described this theory in practice, stating that *“depending on the situation, in the event of weather or something like that, the emergency management director would contact the police department who would then issue a statement. The police also have the authority, however, if there’s an incident that would be, for example, like an active shooter or something like that, they can institute the text alert. So it doesn’t necessarily have to flow from the emergency director in some situations.”* Similarly,

another institution's communication and executive offices concede power to those best equipped to respond to the crisis: *"The shift commander, the folks on staff at any given time are given the authority to send text messages. It's not like they have to get approval from the police chief or anything like that. They do notify the police chief if they send out the text alert, but it is within their authority to send out text alerts."*

One administrator's reflection upon the situational adjustments that are made in reaction to various crises demonstrated a striking resemblance to concepts discussed in both chaos and power theory:

There's an administrative structure to every campus, to every location and who's in charge. And likewise, there is a chain of command for emergencies, you know, fire, police, earthquakes, tornadoes, and that kind of stuff, and that's different at every location, depending on the size and scope and nature of every location. And so the only way that I can explain that is, you know, in some cases, the day to day chain of command is the same that is used for the emergency chain of command. Some areas have, if you will, emergency management officers, you know, police-type people because they're a little bit bigger. So every one of those is different. Suffice to say, that every location has an emergency plan and an emergency communications plan. The emergency plan reflects dealing with the nature of the emergency, you know, like "What if there's a fire?" What happens if there's an earthquake? What happens if there's a crime? Everybody's got those plans, and then obviously emergency communications is a part of that broader emergency plan.

As discussed previously, evidence among several interview transcripts also showed that legislative power affects decision-making when one subject spoke of the trepidation caused by the vagueness of the Clery Act:

I can tell you that I've heard officers talking about it and sometimes how it's very frustrating because the letter of it says you need to send out a report or notification if a crime of violence has been committed and the suspect has not been apprehended. And so to comply with that law, they will sometimes have to send out alerts about claims, often drug-related, that they know are false.

The participants in this study also described the vulnerability caused by their interdependence among external third-party entities such as the software vendor and host, other emergency management personnel, municipal infrastructure, and cellular carriers. As such, this study revealed the complex web of contingent relationships that demonstrate how power theory contributes significant explanatory concepts to the fluctuating state of in-crisis communication.

Complexity Theory as a New Paradigm

Though elements of chaos and power theory were clearly present in the results of this study, independently they explain only a small portion of the issues faced in crisis communication. Consistent with the assertion that grounded theory provides a useful means of exploring new lines of research that have yet to be thoroughly developed in existing literature (Charmaz, 2006; Denzin & Lincoln, 2005; Lincoln & Guba, 1985; McCracken, 1988), during the process of analyzing the data under chaos and power theory, the researcher discovered several studies referencing the emerging development of complexity theory. Combining elements of established theories such as chaos, power, and uncertainty reduction theories, among others, the applicability of complexity theory to the results in this study indicated that complexity theory is a

viable paradigmatic candidate for an area of crisis communication that is in need of further development.

While scholars struggle to present a unified definition of public relations, they have simultaneously engaged in an ongoing discussion regarding the existence of a dominant paradigm in the profession. Through his explanation of paradigms, defined as dominant themes and orientations guiding a field's research, Kuhn (1962) sought to offer an alternate means of scientific exploration drawn from the history of the research itself. He hinted that isolating scholarship to theorems presented in textbooks and literature risks building a discipline around experimental designs influenced by the biases of researchers.

A series of experiments, successful or not, accumulates over time into a shift in mindset that defines a scientific revolution capable of reconstructing existing theory and reexamining prior fact (Kuhn, 1962). While the emergence of a new archetype might not be recognized in the present tense, eventually, a review of scientific history would allow dominant concepts presented in individual theories to accumulate and surface as a new paradigm. He argued that "to be accepted as a paradigm, a theory must seem better than its competitors, but it need not, and in fact never does, explain all the facts with which it can be confronted" (Kuhn, 1962, pp. 17-18). In this sense, Kuhn does not establish the paradigm as the end to scientific inquiry, but rather an invitation to continue new directions of research that address its shortcomings.

Olasky (1989) lauded the application of Kuhn's concept of paradigm as applied to public relations. Olasky reiterated Kuhn's warning against accepting faulty theories for the sake of empirical investigation, citing that public relations practitioners frequently accept presuppositions without thoughtful deliberation. Examining the history and culture of previous

theory stands to solidify the foundation upon which theoretical framework is built, and likewise, ignoring historical context creates unreliable theory (Brown, 2006).

The results of the Avery, et al. study (2010), cited several times throughout this paper, suggested that SCCT and image restoration theory have achieved paradigmatic status in the field of public relations regarding the pre-crisis and post-crisis stages of crisis communication, respectively, and the researchers called for new lines of research to be explored. In 2000, Murphy introduced complexity theory, which combines elements of chaos and power theory with additional factors present during a crisis, to the field of public relations. In context with communication, she defined complexity theory as “the study of many individual actors who interact locally in an effort to adapt to their immediate situation, thereby forming large scale patterns that affect an entire society, often unpredictably and uncontrollably” (p. 447).

In line with Kuhn’s (1962) assertion that new theory complements existing theory, complexity theory addresses concerns raised in major public relations theory, such as chaos, uncertainty, power, and image. Murphy’s (2000) adaptation of complexity theory addresses the unique progression of events that occur during a crisis by offering five characteristics specific to public relations: adaptivity, nonlinearity, coevolution, punctuated equilibrium, and self-organization. Findings from this study reinforce Murphy’s adaptation of complexity theory in public relations.

Components of complexity theory.

To explain complexity theory’s first component of *adaptability*, Murphy (2000) argued that players “do not make decisions based on a conscious strategy to maximize their long term gains. Rather the players are adaptive, simply adjusting to their immediate circumstances” (p. 451). This mentality was observed repeatedly among the responses of interview participants,

who were often subjected to criticism for their communication responses, but in actuality were always acting with the best interests of their publics in mind with the information on hand at any given time. One crisis manager succinctly stated that “*frankly, one of the problems is that sometimes there’s not more information.*” Another manager described the institution’s efforts to balance transparency with responsibility:

We post information on that page if we have new information to share. And we try to make it clear that look, you may go to that page, but there may not be anything there yet because we don’t have any additional information. But check it out and check it frequently. And then if we learn of new information, if we get a description of an assailant, if we know more information, we’ll put it up on that page along with the time – this is post number 1 and it time stamps it. And then, you know, we’ll add a second message later if we have additional information so that in any given incident we may have four, five, six updates on the update page. And that then gives people the feeling that okay, they’re on top of it, they know what they’re doing, they’re giving us information as fast as they can get it. And we’ll even direct media to that page too to say look, go to that page, that will give you what we know.

Murphy explained that similar to elements present in power theory, an exchange of accommodations continually takes place between the organization and its publics and that eventually, the demands of both sides achieve balance. Organizations remain adaptive to the changing dynamics of crisis situations by recognizing that “*you need to diversify your systems and plan for something to go wrong.*”

Nonlinearity is the second component of Murphy's (2000) complexity theory, a concept which is repeatedly echoed in Seeger's (2002) description of chaos theory. Where Seeger described the progression of crisis events, Murphy extended this thought by noting that outcomes do not necessarily bear proportionate relationships with preceding decisions, but rather that they are due to variables that are sometimes outside of the organization's control. As observed in the Virginia Tech case, administrators failed to put the campus on notice after the initial shootings in the residence halls not to purposely withhold information, but because they took a linear stance in believing because a predictable set of criteria had been met that the crisis was over (Virginia Tech Review Panel, 2007).

A number of administrators have already been quoted in regard to how they juggle unexpected complications that arise during a crisis, but one described how the non-linear events of a school shooting create uncertainty even with rigorous training:

We haven't been, thankfully, tested with the ultimate worst case scenario, which is somebody with a gun running around shooting people. I mean, that's the one thing we fear most because that presents probably in many respects the type of danger that's really hard for people to stop. Our police are very, very, very, very good. They've got a protocol in place where they're on site within minutes, but you know how much damage can be done in minutes before the police can get to some place.

Murphy (2000) asserted that the third characteristic of complexity theory is *coevolution*, in which various interactions are affected by competing variables such as power, history, norms, and resources. She noted that traditional public relations literature implies control, whereas complexity theory presents a coherent structure that accommodates the flux and uncertainty that

characterize organizations in crisis. Crisis communicators interviewed in this study described various instances in which the institution's crisis plan provided an outline for various crisis scenarios, but they were keenly aware that the situational nature of emergencies and embraced Murphy's suggestion that organizations "look for overall patterns of behavior rather than isolated variables or highly specified instances that may not reflect the whole process" (p. 455):

At first, we weren't using it for every hazardous material incident, but then it became clear that people heard the sirens coming and just got scared because they didn't know what was going on, so we basically use it as both a warning that something happened and also to sort of calm people down and let them know that it's a hazardous material incident and not something worse.

Similar to Lorenz's (1993) bifurcation theme, within chaos theory, the fourth characteristic of complexity theory is referred to as *punctuated equilibrium*, which Murphy (2000) described as the process in which complex systems "organize into fairly stable periods that are ruptured, often unpredictably, by periods of turmoil, which in turn subside into new stable periods where radically different values may prevail" (p 453). Though this study focused specifically on text messaging technology, the reaction among institutions of higher education in response to the Virginia Tech massacre illustrated that benchmark events, whether internal or external, clearly promote the opportunity for a shift in values to occur, or at the very least, an moment to reflect on potentially outdated communication procedures in light of new developments. One crisis manager illustrated this point in saying that "*we continue to monitor and look for new and better technologies to be able to do this.*"

Murphy's fifth characteristic of complexity theory, *self-organization*, again echoes constructs present in chaos theory. In this stage, organizations react to events by restructuring

individuals to adapt to the situation rather than try to control it, while at the same time adhering to fundamental underlying constants that temper the well-being of the organization with that of its publics. For an organization in crisis, recognition of the point of emergent self-organization indicates that the crisis has ended and provides an excellent transition into Benoit's concepts of image restoration. Higher education administrators recognize that crisis communication on campus is "*a process of constant refinement. It's one of those things where I think you're never there. The more we practice it, the more we test it, the more we actually use it in real life circumstances, the better we get at it.*"

Once the emergency is over, regardless of the outcome, the organization can begin to assess its performance, discover how it has changed and re-emerged in light of the crisis events, and share its version of the narrative with the public. In relation to emergency text messaging, although campuses had prepared for various crises prior to the events that occurred at Virginia Tech, but despite this fact, the public discourse as viewed in the data analysis focused on this particular technology. Though crisis managers agree that text messaging is not the only effective communication too, through emergent self-organization, as one participant noted, the profession of higher education communication management changed in response to the needs of its audience:

It's so important that we pay close attention to people's behavior for receiving and disseminating messages and use the tools that make sense. Take advantage of them and be willing to give up tools that maybe aren't as effective as they had been.

Cottone (1993) stated that "scholarship that explores difference and diversity leads to discoveries that cannot be revealed through traditional investigations" (p. 174). When applied to

crisis communication, complexity theory diffuses the reputation-centric images of public relations professionals by casting the organization into the role of incidental participant rather than master manipulator. Though the flexible boundaries suggested through complexity theory sharply contrast with the traditional positivist mindset that a finite reality exists, this emerging line of research presents an excellent opportunity to expand public relations theory beyond its existing state. Combining elements of the established chaos, uncertainty, and power theory, among others, complexity theory promotes a loosely constructed platform of predictable outcomes within the highly unpredictable circumstances experienced during a crisis.

Best Practices

Though selective coding resulted in a dominant theme describing the situational and unpredictable nature of crisis situations, analysis of axial codes revealed that other central themes in the data were connected to the principal ideas presented in chaos, power, and complexity theory. By linking theoretical ideology in the literature to actual experiences described in the data, the researcher has developed the following best practices.

Create depth and breadth in response channels.

The most common recommendation shared among participants in this study emphasized the importance in developing a flexible crisis communication plan that is capable of responding to the variables that are presented as an emergency unfolds. This is consistent with other research such as Vanderford, et al.'s 2007 study of crisis communication during Hurricane Katrina, Gilpin and Murphy's 2010 revision of complexity theory, and Bell's 2010 overview of seminal crisis communication essays. As noted previously by interviewees, with any communication channel, emergency text messages will fail to reach some users in some situations some of the time,

whether due to system error, infrastructure failures, phones being turned off, and other unforeseen circumstances.

As such, crisis communications plans should include a variety of methods of communicating with publics to create redundancy both in personnel and response channels. The various communication channels included in a crisis communication plan complement one another during crises by serving as catalysts that accelerate a message's speed and expand its breadth. Combining tactics such as social media, email, web-based communication, and display boards mitigates the known limitations of text messaging while at the same time taking advantage of its speed and reach:

I think that the younger generation, although it's getting more and more for people who are older, are literally spending so much time on their phone because they're using it for social media, Facebook, Twitter, things like that, that they always have it with them. They don't always have their computer or aren't necessarily logged on to get their email, although certainly the new technology's changing all of that for us.

Study participants acknowledged that overuse of the emergency text messaging system can lead to a desensitized audience in the event of a true emergency, and Veil, Buehner, and Palenchar (2011) recommended that other tactics such as emerging social media technology provide excellent platforms to disburse ongoing crisis related information.

Crisis communication managers previously quoted in this study cited a variety of methods employed to ensure redundancy in its emergency response plan should the text messaging system fail to operate as expected. Several participants noted that the interface was able to be accessed remotely if the event prevented them from reaching the console, and one stated that if the text messaging system's local server was damaged during an emergency, it

would immediately switch to one out of state. Interviewees repeatedly listed numerous situational strengths and weaknesses of text messaging depending on the location, time, scope, and severity of a crisis. The common opinion shared by all institutions was that although text messaging has become an excellent addition to the list of tools that communication managers may employ during an emergency, effective crisis communication was practiced long before this technology was available and practitioners in this profession will continue to combine the most effective means of reaching people at any given point in time (Bell, 2010).

Encourage collaboration and coordination.

The concept of developing a deep and broad planned communication response also extends beyond the tools used to broadcast a message to the individuals responsible for implementing the technology. Horsley (2010) suggested modeling a culture observed among highly effective risk-prone organizations in which “a collective group of people can compensate for individual human weaknesses and operate successfully within a framework of structure and clearly defined goals” (p. 551-552). Because of the unpredictable nature of crises, organizations cannot guarantee that the individuals designated to implement the communication plan will be available or able to execute the crisis response as rehearsed, they should temper a balance of granting autonomy among key decision makers with a system of appointing alternates prepared to step in should the need arise.

Gilpin and Murphy (2010) described crisis communication as “a collective process in which people pool their expertise, values, and information” (p. 687). A common theme that emerged within the interview data was the importance of coordinating emergency response efforts across a team of qualified and trained individuals to further increase redundancy in the communication plan should the crisis events impede designated individuals from completing

their duties. Most interviewees reported that crisis communication, particularly messages transmitted through emergency text messaging, ideally originates from an individual serving in a public relations capacity. However, some institutions, believing that public safety officers are best equipped to disburse immediate and accurate information, placed the control of the text messaging system in the hands of campus law enforcement officers.

The results of this study illustrated that with standing consent from top-level university administrators, traditional chains of command are sometimes broken in the interest of the public's well being as subject-matter experts are empowered to react with guarded autonomy to the variables at hand (Horsely, 2010). Crisis communicators in this study displayed Murphy's (2000) concepts within complexity theory of adaptability and coevolution in making such adjustments based on experience:

There used to be a process where our technology people would actually send the alert message. So we would have a conversation among myself, the police, the webmaster, and a couple of other people, the people in technology, about the situation and the context. Then the technology people would send the alert. We changed that this year so that we trained the police to actually send the alert. It removes a step and makes it that much faster.

Whether the control of the text messaging system falls under the realm of public relations or law enforcement, in all cases, crisis plans function best when representatives from public relations, public safety, and other senior level university personnel routinely work together to ensure a clear understanding of how roles perform, and sometimes change, during times of crisis (Vanderford, et al., 2007).

Prioritize planning, situational testing, analysis, and adjustments.

The benefits of crisis planning are repeatedly cited throughout crisis literature (Coombs, 2007; Seeger, 2002; Waymer and Heath, 2007), and study participants unanimously reported that routine testing of the emergency text messaging system was an essential component of their crisis communication plans. Gilpin and Murphy (2010) asserted that “through repeated exposure to a range of different circumstances, they learn the strengths and weaknesses of their teammates, and they cultivate the ability to rapidly assess a situation for emergency themes and opportunities” (p. 687).

To emphasize the value of routine testing, one participant stated that “*any success we have can be attributed to empowering people to do jobs during a crisis and practicing and drilling what those roles are on a monthly and quarterly basis. During the moment, things will fail, but if you’ve practiced, if you test it monthly, if you know what your role is, then things are easier to overcome.*” Through testing and analysis of their systems, respondents reported numerous tangible benefits such as using subscriber feedback to contextualize statistical data, amending short messages scripts to provide better information, and overcoming technical conflicts with third party service providers, among others. Though initial testing works out fundamental system conflicts, one manager emphasized the need for continued training and analysis:

We have ongoing training. We train periodically. We go back into the system to familiarize our self with the steps because it isn’t something you do every day. You know, it could go months, and you may not do it. And then you’ve got to kind of keep refreshed on the process.

Based on the results of this study, institutions demonstrated that they have adequately developed a common set of practices to test their emergency text messaging systems and demonstrated the value of rigorous and routine analysis of established procedures.

Maintain integrity of database information.

Deployment of the text messaging software only accounts for a portion of successful message delivery, and higher education institutions must also ensure that the information in the database containing subscriber records is accurate and current (Naismith, 2007). Difficulty maintaining valid contact numbers among active students and employees, as well as purging inactive subscribers, was a common issue reported by the participants in this study.

While all of the school representatives claimed to be satisfied with their subscription participation rates, which varied from an estimated 25 percent to 90 percent, further analysis of the data suggested that their perceptions displayed a myopic tendency regarding subscriber recruitment efforts. All participants mentioned targeting students and parents during orientation, but only two schools reported aggressive measures beyond passive website or newspaper marketing campaigns to ensure that existing students continued to sign up. There tended to be a degree of complacency among the respondents once they felt that an acceptable percentage had been achieved or once the system had been in place for a while, and several respondents also admitted to focusing less on faculty and staff.

Most administrators reported no problems with volume and deliverability, but acknowledged that limiting subscribers and purging data is essential. While most of the schools recognized that curbing the volume of records in the database is essential to peak performance and that limiting subscribers and purging old data is important, they all reported to some degree that finding accurate methods of cleaning up the database falls lower among the list of priorities

and often depend on subscribers to remove themselves. One administrator stated that the communication team *“decided that it was better to have too many people in the system than to inadvertently remove some folks.”*

Invalid contact information also accounted for many of the text messages that did not reach their intended recipients, as users change phone numbers and forget to update, their records or they mistype the phone number in the data entry phase. To curtail this problem, one school routinely required information to be reviewed by embedding a personal information form as a prerequisite for students to register and employees to access their paystubs. The administrator acknowledged that *“individuals can gloss over the page and continue, or even run the risk of mistyping and providing incorrect information, but the benefits outweigh the risks.”*

To solve the problem of correcting invalid or inactive subscriber records, some schools reported moving towards supplementing self-reported information input directly into the SMS database with information in the registrar’s database. That process can be effective for determining whether or not a record is associated with a person who has an active relationship with the university, but it does not guarantee the validity of the phone numbers and other data provided.

Of all of the problems associated with emergency text message deliverability, database accuracy proved to be both the most universal and yet the least prioritized issue reported by study participants. In addition to the obvious benefits of ensuring that the greatest number of people possible receives critical crisis-related information, proper maintenance of the system’s database also stands to improve deliverability rates, thereby denoting a more accurate statistical representation of the technology’s performance. Institutions are aware of the importance of this

component of crisis planning, and they should continue to devote time and resources to this essential function.

Set realistic expectations among stakeholders.

One of the most frequently cited issues among communication managers regarding emergency text messaging was the misperceptions shared among subscribers and the lay public regarding its use. In a recent study of crisis communication literature, Bell (2010) emphasized the importance of such relationships by including audience phenomena in four of the top ten best practices. Many of the study's participants felt that subscribers' lack of understanding of the technology's capabilities, as well as how it is intended to be used during emergencies, led to undue negative criticism of the institution's communication response. However, beyond recruitment campaigns designed to bolster subscription rates, few respondents reported activities targeting educating its publics about the institution's policy on how and when the system is deployed.

Fortunately, the routine testing already described in this chapter not only helped discover conflicts and train personnel on how to send messages, but it also simultaneously trained the audience and sets expectations among recipients. One school stated that not having control over what numbers were entered in the database and later found out that "*we had parents who were getting the text alerts, and that doesn't do the student very much good because they were giving the parents' cell phone numbers.*" Consistent with Bell's (2010) emphasis on partnerships with the public, the data revealed that the audience needs to be trained as early as the recruitment phase as to what the university's intentions are, how each demographic should expect to receive information, and how circumventing the process can actually create more harm.

Study participants agreed that use of the text messaging system should be reserved for “true” emergencies in which people need to take shelter or lockdown or for very severe alerts where danger is imminent. Policies governing other incidents such as isolated fires and chemical spills, severe weather events, campus closures, and even bomb threats were deemed to be more subjective even within the same institutions’ practices, leading subscribers to complain about overuse or underuse of the system. Though one communicator may have been correct in his assertion that *“our responsibility is to put out information for people to take precaution for their safety, not to cancel classes for a weather related event,”* failure to convey such intentions to the public stands to contribute to the chaos rather than mitigate it.

Realistic expectations should be established throughout all phases of a subscriber’s experience with the institution’s text messaging system, including recruitment, testing, message reception, and termination. Since all campuses exercise different options in what events qualify for system deployment, audiences need to know what types of warnings will be sent via text versus when they should seek information from other sources. One administrator described the importance of putting their decisions in context:

So usually after an incident like that we’ll get a host of emails or texts that say “remove me.” Well, we’ll say well you can remove yourself by going in and opting out of the voice alert if you want to. But they get a little heated, and we try to say look, you know, we’re sending this out to try to keep everybody safe. And we understand that you may not care about what happens on campus at two in the morning on Friday night. On the other hand, there may be a mother who is getting the message whose daughter happens to be visiting a friend on campus on Friday night who would very much appreciate knowing that there is something

happening on campus in the wee hours of the morning. So, you know, we all need to kind of care about each other and maybe suffer a little inconvenience for the good of the whole.

Publics feel empowered when realistic expectations are set and adhered to, subsequently enhancing transparency and earning organizational trust.

Devote time and resources to make necessary adjustments.

A major theme of chaos theory and complexity theory is the concept of emergent self-organization (Horsely, 2010; Lorenz, 1993; Murphy, 2000), in which the organization assesses its performance and adjusts to its findings. Without completing this process, organizations put themselves at risk of repeating mistakes and exposing their publics to unnecessary harm. Several instances were discussed in which administrators, expressing much chagrin, admitted to not dedicating time and resources to address known shortcomings in their crisis communication plans.

One administrator acknowledged not recruiting employees as aggressively as students while another inferred that text messaging was for the younger generation. This mindset is flawed not only in its presumption that multiple generations do not utilize text messaging, but also in ignoring that higher education employees also include young people. Data obtained from the document analysis described a situation that occurred at the University of Alabama Birmingham in which a disturbed professor opened fire and killed several colleagues during a faculty meeting (Young, 2010). While this incident remained isolated to the individuals present in that meeting room, had the shooter pursued additional faculty targets in other locations, an institution's decision to focus text messaging beyond students could have proven fatal. Though the administrators surveyed did not completely neglect employees from being invited to

subscribe to the text messaging service, their approach to this topic indicated a potential bias that crisis managers should consider.

As stated earlier in the data, managers cited several additional examples of inefficiencies in their use of emergency text messaging that had been discovered and not corrected. Multiple campuses agreed that maintaining and purging the database information is a challenging and imprecise process, while also admitting that excess volume could hamper deliverability speed. On a related topic, one participant cited “*dwindling state funding*” as a barrier to increasing the system’s volume and capacity. Another administrator explained in reference incorporating subscription invitations and maintenance into the online course registration process that “*we actually talked about that a while back, and we probably should revisit that.*” Yet another manager admitted to a long-standing issue of not creating enough sample text scripts, stating that “*We don’t have enough. We need to make more. We just haven’t had the time to do it.*”

Acknowledging that professionals will always have to prioritize more tasks than time or resources allow, as emergency text messaging, now a staple element of crisis communication in higher education, becomes less of a new technology, administrators must address such known issues rather than assume the risk, caused by further procrastination, of potential consequences that may result during an actual emergency.

CHAPTER 5

CONCLUSION

Bell (2010) distinguished the organization goal during crisis of reducing and containing harm from the crisis communication goal to “have accurate, timely, and useful information that will help victims and restore order.” A director of communication interviewed in this study was so convicted in his opinion of the complex nature of crisis events that he insisted that the summary of this study begin with the following statement:

Emergency notification and emergency preparation is something in higher education that is a never-ending process. You can never be satisfied with what you have because the world changes, whether that be a technological change, the nature of a campus changes, and the way that people want to receive information changes. Life is about change, and campus safety always has to reassess and reevaluate itself consistently. It's a never-ending process, and it's important to differentiate the fact that it's not an admission that it's inadequate.

He expressed frustration with a common public misperception that exists about emergency notifications perpetuating the notion that crisis communication planning didn't begin until the Virginia Tech tragedy in 2007. He maintained that this idea “*couldn't be farther from the truth*” and noted campuses have always used the best technologies for any given time: word-of-mouth or siren notifications served as emergency notification systems on campuses in the 1600's; in the 1970's and 1980's, notifications focused on telephone systems and a reverse-911 approach; computer-based notifications gained widespread use in the 1990's, and these traditional approaches are still effectively used in modern settings as new technologies are introduced. Another participant echoed this sentiment by stating, “*It behooves all of us that are in this*

business to play close attention to what the latest newfangled notion is. I can remember not that long ago that nobody knew what text messaging was, and then when it came on the scene, nobody knew what to do with it. Now it's become a critically important part of crisis communication. The same is true with social media."

The events that occurred at Virginia Tech do not suggest a causal relationship between the success or failure of crisis communication and the presence of an emergency text messaging system, but the data collected in this study indicate that they served as an impetus for campus administrators and the public to analyze contemporary and traditional communication tactics and adjust crisis plans to meet the needs of a particular campus. The cumulative opinion shared among communication managers interviewed for this project emphasized the concept that the chaotic and nonlinear events that occur during active states of emergency necessitate redundancy and breadth in an organization's communication response to be able to adequately react to the situational variables that arise.

Limitations

While acknowledging that the flexible analytical framework of qualitative research reduces precision, Sellnow, et al. (2002) asserted that the study of the chaotic nature of crisis, imprecise in and of itself, is well served by a similarly non-linear approach to data collection and analysis. Though this study highlighted significant issues in the field of crisis communication through qualitative analysis of perceptions of communication managers, some limitations can be attributed to this research design.

Experience with a new method of research.

Though the researcher has been trained in multiple quantitative methods as part of her graduate education and has conducted or worked with faculty members on several studies, this

project served as her first experience using grounded theory to conduct in-depth qualitative work. Throughout the course of this study, rather than working from experience, the researcher routinely referred to numerous examples of similar scholarly publications and maintained ongoing communication with an experienced faculty adviser to ensure that adequate protocols were being met.

Incongruence among data sources.

The grounded theory constructs established by Glaser and Strauss (1967) complicated the comparison of data obtained in the document analysis with those from the interviews. A majority of the articles examined in the study was published in the immediate years following the Virginia Tech tragedy and as such reflect a concentrated bias towards the attitudes of earlier versions of emergency text messaging systems, whereas the interviews conducted with the study's participants included the additional insight gained from having more experience working with the technology. However, not only did the researcher deem combining tools to be necessary to offer more reliable results, but the coding process helped narrow the abundance of categorical implications down to two dominant themes possessing the greatest explanatory power.

Limited sample population.

Also limiting was the fact that the small sample size (N=10) of practitioners interviewed in this study did not produce results that were intended to be generalizable in every facet among all crisis managers at institutions of higher education. Though the data does not share the same empirical benefits as quantitative studies of larger random populations, the limited sample size allowed the researcher to solicit deeper explanations of nuances that were introduced during the interviews and adjust the line of questioning of subsequent participants to explore relevant

tangent themes that would be dismissed in traditional research. Despite the challenges that accompanied using grounded theory to approach this inquiry, the context-based insights that were discovered support this research method for providing the best theoretical and analytical tool to answer the complex questions posed in this study.

Future Research

In order to maintain a manageable framework within which to conduct this study, the analysis and discussion of the data strictly confined to that which related to the inquiries posed by the research questions. As is typical when conducting grounded theory research, the researcher observed a number of additional phenomena and related issues during the course of this study that warrant future research from both public relations practitioners and scholars.

Solicit input from additional stakeholders.

This qualitative study was limited to the perceptions and meanings of communication managers based on actual professional experiences with this technology and exposed potential shortfalls from both a communication and technical perspective. Without input from other interested parties, the researcher does not claim to substantiate or present absolute facts, but rather highlight common experiences shared by experienced professionals utilizing new technology in crisis communication and their implications for crisis communication theoretical concepts and theories themselves, as well as for crisis communication best practices.

The data also indicated that gaps exist between audience expectations and system performance, both due to the actual technology as well as decisions of communication personnel. Subsequent studies should also be conducted including student, staff, faculty, and other members of the higher education community to gain a better understanding of phenomena that occur among recipients of emergency notifications.

Conduct empirical studies on system performance.

To address the questions that remain regarding volume, speed, and message reception, future research should explore quantitative statistical research on third-party deliverability performance, including participation from both system vendors as well as mobile service providers. The administrators interviewed in this were unsure of exact details of what factors hinder system performance, and future research could be conducted to examine the effects of variables such as database size, management of multiple channels from a single console, and external infrastructure. Furthermore, little information is known about what would happen to a system during unprecedented large-scale emergencies that could occur during a time in which the system was competing for bandwidth with the outlying municipal area. Participants reported routine testing of emergency systems within the campus community, but few mentioned collaborative efforts with external agencies to explore complex crisis scenarios that extend beyond campus borders and contend for resources.

Seek further clarification of the Clery Act.

Though not related specifically to emergency text messaging but rather to crisis communication in the higher education community as a whole, this study has revealed the need to conduct a review and clarification of the terms mandated by the Clery Act. Multiple study participants indicated that their emergency responses are often influenced by the fear of unintentionally violating the legislation since there is no consensus on when and how to comply.

Although evidence found in the document analysis revealed that recent amendments to the legislation focuses on “getting out the warning as quickly as possible, even if you don’t have all the facts” (Lipka, 2012), the practices demonstrated by participants in the study indicated a great deal of variations in interpreting which events qualify for the warnings. The act was

originally introduced in the spirit of addressing and correcting a lack of transparency related to reporting accurate campus crime statistics, and that portion of the legislation has been thoroughly outlined and interpreted by law enforcement professionals. The same due-diligence is also owed to the emergency management community so that the required terms of the Clery Act are indelibly explained and that emergency responses can place the public's well being over arbitrary legal compliance.

Extend public relations theory in the area of in-crisis research.

Finally, as was previously discussed in-depth, the researcher calls for additional research in the public relations field to be conducted to expand theoretical development beyond pre-crisis and post-crisis to benefit individuals making in-crisis decisions. While in no way minimizing the value of research in these critical areas, public relations theory has not yet sufficiently explored the issues that organizations' communication managers must address as crises develop. Though a well-prepared crisis plan can help mitigate damage and successful application of image restoration theories can promote the organization's long-term goals, public relations practitioners rely on a different skill set to navigate the unpredictable and chaotic situations in which they find themselves during an emergency. The current body of public relations research does not adequately address this need, and future studies should be conducted to explore the applicability of the theories presented in this paper, among others, to assist communication professionals during this equally important phase of crisis management.

Final Thoughts

The data collected in this study explain how higher education institutions utilize emergency text messaging systems to disburse crisis-related information for immediate and ongoing threats to public safety. The crisis communication managers interviewed echoed the

sentiments of one communication manager who stated that *“the assumption by the lay public is often that colleges’ communication plans have evolved in reaction to April 16, 2007, and while that obviously changed the world, and while that changed people’s expectations of what was offered, the reality is that campuses have been reviewing these things before, during, and after and will continue to do so.”*

Emergency text messaging has proven to be an advantageous asset included in higher education institutions’ crisis communication plans. Although this technology has garnered much recent attention among the lay community as being the premiere method of broadcasting emergency notifications, the participants in this study indicate that it is an effective addition, not replacement, to existing traditional communication channels. While text messaging may its shortcomings in certain scenarios, the professionals interviewed in this study did agree that when all factors, including system performance, audience expectations, and reach are considered, it can be one of the most effective methods of ensuring that the message is received and processed by a large amount of people in a short amount of time. In conjunction with other traditional forms of emergency notification, when used in a carefully constructed and tested communication plan, text messaging systems have greatly enhanced the effectiveness of emergency communication during crises on college campuses and universities.

With its focus on a highly practical application of theoretical constructs, this study also illuminated the need for additional concentrated research on the unique issues communication managers face during times of crisis. A review of the literature revealed that adequate emphasis has been placed on paradigmatic theories such as SCCT and image restoration, and scholars should now seek to develop new lines of research in this neglected phase of crisis communication. Botan (1993) argued that a paradigm struggle exists between the applied and

theoretic branches, as practitioners drawing more from business ideologies to guide decision-making, while theorists first turn to education and scholarly research. When Bernays (1978) criticized university curricula for omitting the social science component of public relations, he did so with the intent to forge a necessary relationship between the academic community and practicing professional to garner respect for the field as an agent of social responsibility. This concept continues to gain momentum as contemporary literature repeatedly calls for a bridge to unite public relations practitioners and academics (Broom, et al., 1997; Heath, 2006; Pearson, 1990). Drawing from established chaos, power, and uncertainty theory, Murphy's (2000) complexity theory extends public relations research by filling the gaps both in crisis literature and in meaningful contributions from the academic community to practitioners.

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APPENDIX

APPENDIX A INTERVIEW GUIDE

GRAND TOUR QUESTIONS

Please describe your job responsibilities related to crisis communication.

Describe how your institution's crisis plan involves the use of an emergency text messaging system.

What percentage of the university community is subscribed to the emergency alert system? (if possible, separate faculty, staff, student, parent, and other populations)

What guidelines are used to determine if an event qualifies for being broadcast via emergency channels?

What type of testing has been conducted to examine and troubleshoot potential deliverability issues with your text alert system?

EXPERIENCE WITH EMERGENCY TEXT MESSAGING SYSTEM

Please describe an instance in the past few years in which the emergency text messaging system was used during a real emergency. What happened? How were you involved?

What have been the benefits, or potential benefits, if any, in using an emergency text messaging system during a crisis?

What have been the problems, or potential problems, if any, in delivering crisis related information when using the emergency text messaging system during a crisis?

Follow-up Questions:

- *How did your emergency text messaging service ability perform in handling increased volume in short periods of time?*
- *Has your emergency text messaging service interfered with voice communication systems, or vice versa?*
- *To what extent, if any, do various types of campus events share dedicated communication channels? (campus maintenance, sporting events, class cancellations or delays, severe weather, individual assault, mass violence, domestic violence, missing persons)*
- *Are there any methods in place, and if so what are they, to distinguish legitimate campus emergency communication from fraudulent messages, non-emergency messages, and other non-campus communication?*
- *Do emergency text messages direct recipients to another source for more detailed information?*

APPENDIX B

INFORMED CONSENT STATEMENT

Exploring the Use of Emergency Short Messaging Systems During Crises on College and University Campuses

INTRODUCTION

Thank you for agreeing to participate in this study, which is being conducted in partial fulfillment for a Master's thesis. This study is being conducted to understand your experience and analysis of the use of short messaging systems during emergencies on college and university campuses. You have been invited to participate because we feel that your knowledge of this topic can contribute to our understanding of disaster communication. It is our goal to provide help and insight to other institutions of higher education as they evaluate communication response plans for the myriad of potential crises that may occur on campus. You will be asked questions about your institution's preparation for and potential experiences with natural and manmade disasters, particularly as it relates to the use of emergency Short Messaging Systems.

INFORMATION ABOUT PARTICIPANTS' INVOLVEMENT IN THE STUDY

Your participation is voluntary. You may change your mind at any point later or stop participating, even if you've already given consent. If you have any questions regarding the consent form or the research project, please do not hesitate to ask the researcher. This interview will be audio-recorded. The information recorded during this interview will be entirely confidential, which means that no one will be able to access any information that identifies you documented during the interview except the research team (Tanya Ickowitz and Michael Palenchar). No information will be repeated that could in any way be linked to you. The interviews will be transcribed, and all identifying information linking you to the interview on the tapes will be removed. The transcribed form of the interview is the basis for the data analysis. The interview with you may take about one hour.

RISKS

During the course of the interview, you will be asked to relate your preparation for and experiences with using the emergency text messaging system at your institution. You may or may not feel stress or discomfort remembering and sharing these accounts. If any of the questions make you feel uncomfortable, you are not required to answer them. The interview can be ended at any point in time if you feel uncomfortable.

BENEFITS

Although this interview may or may not be of direct benefit to you, you will help us enhance our understanding the effectiveness of using short messaging systems during campus emergencies, which will help us better communicate with campus communities in future situations.

CONTACT INFORMATION

If you have questions at any time about the study or the procedures, you may contact the researcher, Tanya Ickowitz, at The University of Tennessee, 476 Communication Building, Knoxville, TN 37996-0332; E-mail: tickowit@utk.edu or call at (865) 607-2105. If you have questions about your rights as a participant, please contact the Office of Research Compliance Officer at (865) 974-3466 or email at: blawson@utk.edu.

_____ Participant's initials

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed in full.

COMPENSATION

Participants will be awarded nominal monetary compensation for their time in the form of a \$25 Visa gift card.

To ensure that confidentiality is maintained, please electronically sign and protect this document with the same password used to unlock the document before returning this form to the principal investigator, Tanya Ickowitz, via email at tickowitz@utk.edu. You may also use the attached cover sheet to fax the signed form to the attention of Michael Palenchar at (865) 974-2826.

CONSENT

I have read the above information. I am 18 years old or older. I have received a copy of this form. I agree to participate in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

I have read the above information and I agree to have this interview audio-recorded.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

EXPEDITED APPROVED

DATE 4-12-2011

Brendal Lawson

Compliance Officer & IRB Administrator

APPENDIX C CONTACT GUIDE

Dear _____,

I am a Master's student in the Public Relations program at the University of Tennessee Knoxville, and I am working on my thesis project under the advisement of Dr. Michael Palenchar, Managing Director of the UTK Risk, Health & Crisis Communication Research Unit. I believe that learning about your experience in campus communication would greatly enhance my study, which will include confidential interviews of crisis communication managers at several colleges and universities in the US, and I am requesting your consideration for participation in this project.

My thesis will examine the use of text messages during emergencies on college and university campuses. It is my goal to provide help and insight to other institutions of higher education as they evaluate communication response plans for the myriad of potential crises that may occur on campus. Participants will be asked questions about their institution's preparation for and potential experiences with natural and manmade disasters, particularly as it relates to the use of emergency short messaging systems. Although this interview may or may not be of direct benefit to the study's participants, their insight will help us enhance our understanding the effectiveness of using short messaging systems during campus emergencies, which will help institutional administrators better communicate with campus communities in future situations.

If you agree to participate, I will work with you to schedule a time to conduct a phone interview that will last approximately one hour. The identification of all participants and their associated institutions will be kept confidential in the final analysis. In appreciation of your time, you will be given a \$25 Visa gift card for your participation in the study.

I appreciate your consideration of this project. If there is another individual at your institution that has more applicable job duties relating to deploying the short messaging system during an emergency, please feel free to redirect this email accordingly. You can also email me with any questions that you might have about the study or to confirm your willingness or inability to participate.

Sincerely,

Tanya Ickowitz
Master's Student
School of Advertising and Public Relations
College of Communication and Information
University of Tennessee Knoxville

APPENDIX D
TRANSCRIBER'S PLEDGE OF CONFIDENTIALITY

As a transcribing typist of this research project, I understand that I will be hearing tapes of confidential interviews. The information on these tapes has been revealed by research participants who participated in this project on good faith that their interviews would remain strictly confidential. I understand that I have a responsibility to honor this confidentially agreement. I hereby agree not to share any information on these tapes with anyone except the primary researcher of this project. Any violation of this agreement would constitute a serious breach of ethical standards, and I pledge not to do so.

Transcribing Typist

Date

VITA

Tanya D. Ickowitz received her Bachelor's Degree in Theatre at Loyola University New Orleans. This thesis study completed her degree requirements to receive a Master of Science in Communication with a concentration in Public Relations at the University of Tennessee, Knoxville.

Ms. Ickowitz began her professional career in higher education in the Office of Admission at George Mason University in Fairfax, Virginia, where she developed her interest in the field of college student personnel. She currently works as the Director of Communication and Outreach for the non-profit educational funding corporation, Edsouth, where she facilitates college-bound outreach programs and manages the college planning website, eCampusTours.com.

During her graduate studies at the University of Tennessee, Knoxville, Ms. Ickowitz collaborated with professors and colleagues on a number of papers accepted for publication and conference presentation. In April 2010, "Managing Narrative in the Media: TVA Ash Spill Crisis" was awarded Top Paper, Public Relations Division of the Southern States Communication Association. In September 2010, "Diffusion of social media among public relations practitioners in health departments across various community population sizes" was published in the *Journal of Public Relations Research*.