

Crisis Response Communication Management: Increasing Message Clarity with Training over Time

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ABSTRACT

The characteristics of a crisis cannot be predicted and no two crises are alike. The responders in a crisis also vary creating two axis of uncertainty that inhibit rapid and accurate scope definition of a crisis. How and what a responder chooses to communicate in a crisis can impact subsequent response efforts placing importance on the clarity and cohesion of information exchange. Training and increased practice of clear and accurate message content between responders is proposed to improve the situation details needed for rapid scope identification. SMS text-messaging is one viable, mobile interoperable communication technology, accessible for everyday use. This research studies message content exchanged between responders and begins with the message-prompt to message-response relationship during crisis response training. A web-enabled training application has been designed to simulate two-way SMS text-message exchange and captures communication responses based on defined task prompts. Leveraging Speech Act Theory and the use of plain language protocols for communication exchange, the SMS text-message responses are assessed for ongoing training and practice.

Keywords

Crisis management, community responders, SMS text-messaging, interoperable communication, training and simulation.

INTRODUCTION

Obtaining accurate situation details at the onset of a crisis depends on the clear and concise content of each communication message exchanged. Alike is “the ability to retrieve accurate information quickly is critical to assessing and responding to the situation (NIH, Troy, Carson, Vanderbeek, Hutton, 2008).” The initial communication details provided in each message are vital to reach mutual understanding on the scope and magnitude of the situation. Acquiring situation details at the local level (incident location) from different responder roles (first responders, community responders, public health practitioners, and volunteers) is also essential for timely and improved response efforts.

A way to manage crisis response communication to increase message clarity is needed. Communication management is proposed to improve communication readiness for responders and can be achieved through training and practice between crises. The ability to assess message content exchanged between responders and then to provide feedback to the responder with suggestions that improve message clarity is the next step of this research. Through feedback, other measures can be reviewed, such as the time it takes to generate a clear and accurate message. Moreover, clear and concise information exchange between the sender and receiver can challenge responders, such as those who work in local communities (volunteers) and do not practice crisis communication frequently (Gomez, Chumer and Patten, 2007; Gomez and Passerini, 2006).

This research seeks to increase communication readiness before the onset of a crisis and places emphasis on the training and practice (communication management) between crises to improve message content. Speech Act Theory and the use of plain language protocols support the theoretical foundation of this research, rather than focusing on the actual communication device. Increasing message clarity through training and ongoing practice based on routine tasks (normal business practices) is proposed to increase communication response readiness for crisis response. A key dimension for communication exchange is the message size (length) and clarity of the message content which complements today’s increased use of mobile devices. As such, results from a web-based crisis response training application adapted for SMS text-messaging application are presented and discussed. The focus is on the need for communication management for ongoing training and practice with plain language protocols as a way to improve

message clarity, thereby increasing communication response readiness. Next steps include an assessment instrument that measures writing content as a feedback loop tool.

COMMUNITY RESPONDER COMMUNICATION

Communicative Action Theory

The need for rapid communication coupled with the need to achieve mutual understanding is critical for crisis response. Varying communication devices and associated device limitations affect the content of the message exchanged, creating an overarching barrier in the response effort. As crises increase in complexity and the need for coordination increases, communication exchange also becomes more complex, furthering the need for training and practice (coordination between responders and between interoperable devices). Te'eni (2006) notes that “the complexity of implementing communicative action grows with the need for coordination, the contextual demands (norms and values), and the use of scarce resources.”

In a crisis, an individual responder takes “action” based upon a command (directive) prompt for assistance. The responder’s communicative response to the command prompt draws upon goal-oriented behavior from Habermas’ Theory of Communicative Action (Te’eni 2001, 2006), and focuses on communication to achieve and maintain mutual understanding (Ngwenyama and Lee, 1997). The communication exchange entails a request to respond invoked by the sender and sent to the receiver. The message content varies based on the uniqueness of the incident, creating an element of uncertainty.

Te’eni (2001) notes, effective communication could be adapted into the communication technology and discusses how recommendations made to the sender regarding the optimal amount of contextual information in the message can be achieved. Habermas (1998) remarks that actors seek to reach an understanding about the action situation and their plans of action in order to coordinate their actions by way of agreement (coordinated by speech acts). Moreover, Habermas (1998) defines communicative action as “the interaction of at least two subjects capable of speech and action who establish interpersonal relationships. The actors seek to reach an understanding about the action situation and their plans of action in order to coordinate their action by way of agreement (Te’eni, 2001; Habermas, 1984).

SMS Text-Message Exchange

Responders use multiple modes of communication: voice, text, multimedia (text, photo, audio, and video) for non-crisis communication exchange. In a crisis, the optimal mode of communication cannot be predicted leaving the choice of a communication device as a vulnerability and inhibiting the ability to standardize. Regardless of the communication medium, the message clarity and situation details conveyed in a communication exchange are essential for timely and accurate crisis response.

The use of speech acts combined with plain language protocol training is one approach proposed to improve information exchange and message clarity. Speech Act Theory addresses the differences between sentences and statements, along with other utterances (Austin, 1962; Searle, 1969). The language (words) used to reach mutual understanding is an action portable to any communication medium. For example, SMS text-messaging is a written form of communication which utilizes a “command oriented” application style.

SMS use around the world is vast and has demonstrated success in crises when other telecommunication resources fail. Its simple low-cost technology that is durable due to its small packet exchange technology contributes to its success. SMS text-messaging is also a form of written communication that exchanges packets of information between information communication technologies (McAdams, 2006). SMS text-messaging has an exchange limit of 160 characters per message sent, causing the message sender to shorten messages and focus on the content conveyed in a single message.

Although some devices will allow you to send more than 160 characters at one time, the receiving service will arbitrarily break the message into 160 character units regardless of if the break falls between words or in the middle of a single word. A message that is broken into multiple messages, offers no guarantee that the order of the multiple messages will arrive in the same sequence as the message was written. Some cellular services, such as Cingular Wireless (2006) do label each message (i.e. 1 of 2, 2 of 2), while others do not. Some agent based services will provide one message with hyperlinks within the message to allow navigation to each part of the message in sequence, as seen with Google SMS (2006).

SMS has begun inroads to an SOS equivalent due to the alternate delivery route to voice channels. During Katrina, SMS text-messages got through when other communication methods failed. Coast guard officials used the technology for direct life-saving helicopter rescues during the Gulf Coast Hurricanes. SMS text-messaging can be considered a simple technology. For example, the ability to send small packets that sit in a message queue outweighs the use of voice calls that require you to continuously redial. There are approximately 190 million Americans with text-messaging functionality on their cell phones. However, mass text-messaging could be problematic if not carefully tested. The use of text-messaging won't overload the telecommunication systems (SA, 2005), but instead queues messages during high volumes. The federal government is currently piloting its use with four major wireless carriers. The preferred design is for smaller distributions resembling that of a community of interest.

Plain language across organizations

The dialogue or message exchange between two or more individuals contains content essential to the response initiative. Within a message can be: responder role specific terminology, confirmation of status or content identifying resource needs. The interpreter (receiver) of each message needs to quickly decipher the essential information to advance the response efforts and where the use of plain language can assist. Plain language is clear, straightforward expression, using only as many words as are necessary (PL, 2006). The use of plain language has become an international initiative and lends itself well to SMS text-messaging. Plain language is becoming a standard (FEMA, 2005) for interoperable communication in emergency response, and dates back to at least May 2005 when a directive on new procedure codes was issued phasing out agency and jurisdiction specific codes with the use of standard language. The use of plain language across organizations is an interoperability focus for FEMA, NIMS, and associated agencies, such as the National Institute of Health (NIH). Table 1 presents examples of role specific terminology that currently exists when individuals respond in a crisis.

Terminology for Crisis Response Roles	
Type	Essential Rule Definition
Police	Police 10 codes
Fire	Fire 10 codes
EMS/Medical	Medical terminology
Disaster Relief	Humanitarian specific terminology
Specialty Teams	Specialty/task specific terminology
Community Responder (volunteer)	Organization specific terminology

Table 1. Crisis Responder Specific Terminology

Plain language initiatives in emergency preparedness are begin realized at the international, national, and local levels. FEMA (2006) for example states that plain language must be used with interoperable communication systems (enabling fire, police, EMS/medical to collaborate) replacing the use of 10-codes (Table 1).

ASSESSING COMMUNICATION MESSAGES FOR FEEDBACK

Message Content Acquisition through Web-Based Training

Message content was acquired from community responders (study participants) through a web-based training application developed for this study. The objective was to study user behavior, response and training effectiveness. The application introduced a crisis scenario through multimedia components that were interleaved with pre-training and post-training survey instruments. Pre-training and post-training task response (message content) was also obtained during the training session (Figure 1).

The current version of the training application has the study participant assume the role of a community responder who exchanges SMS text messages with the simulated Action Team (command and control) coordinator. The role of the community responder (volunteer) was to respond to early warnings (storms) for increased preparedness. As the study participant stepped through the crisis scenario six task prompts were introduced that invoked six communication responses, simulating SMS text-messaging. Pre-training communication response measures were obtained before plain language training protocols were introduced. The task prompts were based on the Essential Rules (Table 2) of Speech Act Theory (Searle, 1969) and adapted for use with SMS text-messaging.

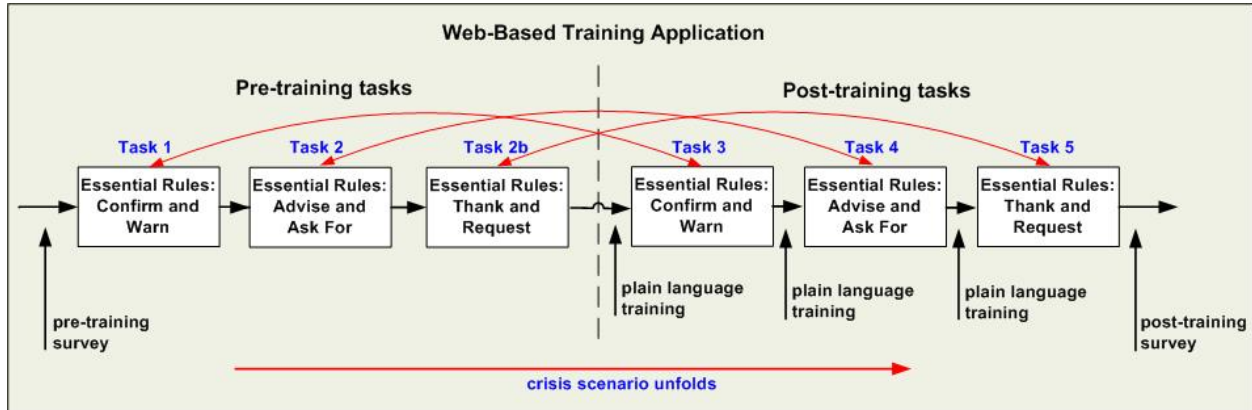


Figure 1. Web-Based Training Application Tasks.

The use of speech acts coupled with plain language protocol training applied to a crisis response scenario was part of the web-based training application. Establishing a baseline through training and introducing procedures was the first step of this research. Ongoing practice between responders is proposed to improve the content and clarity of message exchange prior to the onset of a crisis. A communication management approach that uses a feedback loop is an important part of the communication exchange cycle and is the subsequent step of this research. Two-way communication exchange, especially when timeliness of information is at stake can benefit from message clarity; especially when communication exchange takes place from the field from a mobile device with limited capabilities.

Illocutionary Speech Act Types	
Type	Essential Rule Definition
Assert	Counts as an undertaking to the effect that <i>p</i> represent an actual state of affairs.
Warn	Counts as an <i>undertaking to the effect</i> that E is not in H's best interest.
Advise	Counts as an <i>undertaking to the effect</i> that A is in H's best interest.
Question	Counts as an <i>attempt to elicit this information</i> from H.
Thank	Counts as an <i>expression of gratitude</i> or appreciation.
Request	Counts as an <i>attempt</i> to get H to do A.

Adapted from Searle (1969).

Table 2. Illocutionary Speech Acts per Episode (Task Prompt)

The training model and associated framework used SMS text-messaging syntax (160 character message limitation) as a lowest-common denominator. SMS text-messaging syntax was also used to establish a communication baseline that offers promise for responders with limited communication resources who are working in the field and need a mobile communication medium. Community responders are an essential part of crisis response efforts and assume roles in their local geographic area until specialty resources arrive (Gomez and Turoff, 2007). SMS text-message responses as a baseline can be objectively assessed based on the 160 character per text-message exchange limit.

The community responder role (community volunteer) was the targeted population for the initial study. The community responder is a member of a local community who is not trained as a first responder (fire, police, EMS/medical), but finds themselves responding in a crisis (Gomez, Passerini, Hare, 2006). For the community responder, the frequency of quick-response tactics is limited because the community responder is not called upon to respond as frequently as a first responder.

Message Content Assessment through Web-Based Training

The web-based application provided training to 50 participants and proposed to increase communication readiness and message response. Simulated SMS text-messages were invoked during the online multimedia training of the application. Each study participant provided task (message) responses to six task prompts; three pre-training message responses and three post-training message responses. The collection of 300 message responses resulted from the study. The message response of each training task was coded with a value ranging from 1-4 (Table 3) and was analyzed for improvement of both the training task delivery and also the task output. For each responder (study participant) the application obtained six task (message) responses.

Response Code	Response Level	Criteria Used
1	Low	Participant response did not answer both prompts for the task.
2	Low-medium	Participant response did not convey situational information. Participant response included ambiguity or uncertainty.
3	Medium-high	Participant response answered both prompts with some situational information or mixed verb tenses or content causing confusion.
4	High	Participant response answered both prompts with essential situational information.

Source: Gomez (2008).

Table 3. Initial Response Codes Assigned

Each speech act type was introduced (Table 2) through a task prompt that requested an SMS text-message response. The same speech act type was introduced before plain language training and after plain language training (Figure 1) as a basis for comparison. Message content, word count, and character count were captured for each participant (Table 4). For example the Task 2 Response for responder #1 was coded with a response code of 1 because the participant did not answer both task prompts (essential rules: advise and ask for). Task 4 Response for responder #1 was coded with a response code of 2 because the response did not convey situational information. The participant response also included ambiguity or uncertainty

Task 2 - Essential Rules: Advise and Ask For			
Task Response	Coded Response	Word Count	Character Count
1. Joe I need instructions	1	4	23
2.Rt. 80 is closed and the location you are you cannot locate the street number so he can help you get to your assigned neighborhood.	1	25	131
3. Detour made due to Rt 80 closure. need dir. from Broad & Karen to assigned neighborhood	3	16	87
4. Rt 80 closed. exited onto Rt 19. Please forward directions to my neighborhood from the corner of Broad Street and Karen Drive, I can see East Coast Telecard.	4	28	157
Task 4 - Essential Rules: Advise and Ask For			
Task Response	Coded Response	Word Count	Character Count
1. I will try to work with them. I will call for help. while we wait for someone, I will try to make her feel well.	2	25	112
2. approached last house on orchard street. Enter house notice elderly alone with son. indictes son having trouble breathing. Need medical resources to aid..	4	23	152
3. Arrived at last house on orchard street. Send medical, male is having trouble breathing.	4	14	84
4.@ last house on Orchard St. Require EMS ASAP for son having trouble breathing.	4	14	78

Table 4. Task Response Examples - Study Findings

For longitudinal research as proposed in this paper, the pre-training and post-training responses can be analyzed for each study participant to help determine a way to introduce practice with a feedback loop. Significant differences (Table 5) were noted between the pre-training and post-training responses to support next steps of this research. The findings can be reviewed with each participant before extending training and practice to an actual communication device on a regular basis creating an ongoing feedback loop. Evaluating each prompt for a responder over time and providing feedback is proposed to improve the message content and clarity while increasing communication readiness to respond.

Task Response Level	Independent Sample T-Test					
	Mean		Standard Deviation		t	p
	PreTrain	PostTrain	PreTrain	PostTrain		
Paired Tasks 1 & 3	3.02	2.94	.87	.91	.65	.522
Paired Tasks 2 & 4	3.06	3.56	.94	.13	-3.63	.001**
Paired Tasks 2b & 5	2.36	3.32	2.36	3.32	-4.45	.000***

* p< .05

** p< .01

Source: Gomez (2008).

Table 5. Communication Protocol Improvement (Pre-training/Post-training Comparison)

The use and practice of plain-language is also proposed to bring the use of words, such as “proceeding” and “arrived” closer together by reducing the vocabulary used by responders. The current study establishes a baseline measure and then introduces plain-language training that parallels each speech act type as a way to begin measuring the reduction in vocabulary and word placement within a sentence for algorithm development. These findings can be evaluated further for a longitudinal model with training and practice for message clarity improvement.

CONCLUSION

In conclusion, this research assesses the potential of plain language training protocols combined with speech acts as a way to improve message clarity and response readiness. The initial web-based training application reflected significant improvements in message content offering promise for longitudinal study. Leveraging plain language written communication exchange of community responders offers a potential baseline for this ongoing research. The task design suggests a relationship between the task prompt type (speech act) and the task response (message exchange). Observations to-date reflect the need for further analysis of message responses from the six task prompts per study participant to better assess the feedback process for training and practice.

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