

Exploring the U.S. Coast Guard's stance agility on Twitter during Hurricane Harvey

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Abstract

Drawing on the contingency theory of strategic conflict management, this study examines how the U.S. Coast Guard (USCG) used Twitter to communicate during Hurricane Harvey. A content analysis was conducted on tweets ($N = 273$) by using stances along the contingency's continuum, finding that the USCG frequently adopted stances on both sides of the continuum's spectrum throughout the disaster event. The analysis of USCG tweets provides a real-world case study of how Twitter is used by organizations to strategically communicate with the public during a disaster event. Like many disaster aid organizations, the USCG must balance competing goals of assisting the impacted population, while continuing to secure funding from the U.S. government. The current study contributes to contingency theory of strategic conflict management literature by applying the theory to a disaster, providing tangible evidence that disaster communication research should consider incorporating different stances across the continuum, sometimes simultaneously, that could help guide strategies, ultimately helping the organization and public being affected during a disaster.

KEYWORDS

accommodation, advocacy, contingency theory, disaster communication, disaster response, hurricane, stance agility

1 | INTRODUCTION

Over a 6-day period in late summer 2017, Hurricane Harvey became the costliest disaster in U.S. history (Doyle, 2017). The hurricane made landfall three separate times. Two feet of rain fell in the first 24 hr, and at its peak on 1 September, one-third of Houston was underwater. Flooding forced 39,000 people out of their homes. The disaster response began immediately. Federal forces rescued 10,000 people who were trapped in their homes or on flooded highways (Hernández, Zezima, & Achenbach, 2017). During this period, crisis relief organizations had to manage both the response efforts and maintain the outreach to various communities and constituents via social media. Organizations like the U.S. Coast Guard (USCG) serve as first responders to disasters and provide both rescue efforts and messaging around the disaster. During Harvey, the USCG mobilized

2,060 personnel to rescue 11,022 people and 1,384 pets (FEMA, 2017). This was done in concert with and facilitated by disaster communication practices that, in part, were conducted via social media, as noted by Rear Admiral Paul Thomas in an appearance before Congress (Johnson, 2018).

In this case study, we explore how the USCG interacted with its publics on social media during Hurricane Harvey. We believe scholars, policymakers, emergency planners and other interested stakeholders can learn valuable insights by examining past disasters. This can lead to improvements in existing plans and preparation of new plans for potential scenarios (Jaeger, Langa, McClure, & Bertot, 2007). Through the lens of the contingency theory of strategic conflict management, we conduct a thematic content analysis of USCG tweets to explore its adoption of stances along the contingency theory continuum on Twitter. Our study gleans insights into social media strategies during the phases of the

Hurricane Harvey disaster. We provide exemplar tweets highlighting effective communication and offer suggestions for incorporating the contingency theory into future analysis of post-disaster communication.

1.1 | Social media use during disasters

Disaster communication relies on timely and accurate communication, and social media platforms help organizations achieve this in times of disasters. Social media offers the potential for increased information capacity, dependability and interactivity (Jaeger et al., 2007). It has become an expected tool in disaster responses; thus, it is valuable for continued theory-based scholarly examination. Many studies have examined disaster communication topics such as media effects, social media environments during a disaster and communication tactics for specific disaster phases (e.g., Houston, Spialek, & First, 2018; Houston et al., 2015; Liu, Fraustino, & Jin, 2016; Pfefferbaum, North, Pfefferbaum, Jeon-Slaughter, & Houston, 2014). However, few studies have examined the content of what rescue organizations and governmental agencies communicate about during a disaster (Jin, Pang, Pang, & Cameron, 2006; Spence, Lachlan, Lin, & del Greco, 2015).

Despite potential shortcomings such as the disbursement of rumours of false information (e.g., Alexander, 2014; Takayasu et al., 2015; Williams, Valero, & Kim, 2018) and the potential for negative dialogue (e.g., Cheng, 2018), social media shows the capability of connecting individuals to community and governmental resources in real time, offering communication tools that are low-cost, adaptable, reliable and scalable (Collins, Neville, Hynes, & Madden, 2016; Jurgens & Helsloot, 2018; Mills, Chen, Lee, & Raghav Rao, 2009; Schmalzried, Fallon, & Harper, 2012). Specifically, Twitter continues to develop into a widely used and legitimated source of news and information (Morris, Teeva, & Panovich, 2010; Sin & Kim, 2013).

The use of social media has several functions depending on the disaster phase in which it is implemented in (Houston et al., 2015). There are three types of phases related to a disaster: pre-event, event and post-event. Specific functions of pre-event social media can include providing preparedness information and warnings, along with signalling and detecting disasters (Houston et al., 2015). During the event phase, social media should be used to send and receive requests for help or assistance, along with providing a place to learn about disaster-affected individuals or places. Finally, in the post-event phase, social media use is generally directed towards connecting and reconnecting community members (Houston et al., 2015).

1.2 | Determining response strategy through organizational stances

The contingency theory of strategic conflict management defines public relations as the strategic management of conflict and competition in the best interests of an organization and, when possible, also in the interests of key publics (Cameron, Wilcox, Reber, & Shin, 2008). It provides a theoretical framework that acknowledges at times that answering the call to conflicting demands needs to be interwoven into a cohesive communication strategy via the framework's dynamic stances (Jin et al., 2006). Unlike other public relations and crisis communication theories that take a prescriptive and, at times, exclusive categorization, the contingency theory relies on a continuum that researchers argue emphasizes a more realistic description of how public relations are practised (Cancel, Cameron, Sallot, & Mitrook, 1997).

The classification of a disaster situation as a crisis is in line with previous disaster communication literature (e.g., Coombs, 2019; Janoske, 2018; Spence et al., 2015; Utz, Schultz, & Glocka, 2013; Zhao, Zhan, & Liu, 2019). Crisis communication is a process of purposefully communicating information by a public or private organization to an audience (Walaski, 2011). It involves the sending and receiving of messages "to prevent or lessen the negative outcomes of a crisis and thereby protect the organization, stakeholders, and/or industry from damage" (Coombs, 1999, p. 4). Communication is particularly challenging during crises because an immediate response is necessary, due to the looming threat, and because situations are inherently uncertain (Ulmer, Seeger, & Sellnow, 2007).

Depending on the circumstances surrounding a threat, the contingency theory states an organization can choose from dynamic stances within the accommodation or advocacy sides of the spectrum (Figure 1). The continuum acknowledges that an organization's chosen stance is determined by a mix of internal and external factors (Cameron et al., 2008). This is directly applicable to the dual goals of the USCG: assist the population affected by the hurricane (external needs) and showcase USCG as an effective and efficient organization to maintain a positive reputation with the U.S. government (internal needs). Notably, the USCG continues to receive funding at the levels it requires for maintaining its operations if the agency can articulate how it (a) sustains mission excellence, (b) invests in the 21st century, and (c) maximizes value to the United States (USCG, 2018).

Competing
Litigation PR
Arguing
Competition
Contending
Compromising
Avoiding
Cooperation
Collaborating
Negotiation
Compromise
Capitulation
Apology & Restoration

Pure Advocacy I-----I Pure Accommodation

FIGURE 1 Contingency theory continuum adapted from "It depends: A contingency theory of accommodation in public relations" by Cancel et al. (1997)

1.2.1 | Public types during a disaster

Disaster communication engages multiple, at times, competing publics, and social media provides a channel for this communication. During a disaster, there is a need for prompt decision-making by organizations and engagement of multiple publics with differing needs (Jin et al., 2006). A government entity such as the USCG must navigate the social media landscape comprised of multiple publics. On social media, disaster publics are individual citizens, communities, government entities, organizations (e.g., the Red Cross) and news media (Houston et al., 2015). Communication to publics, such as individuals and communities, is particularly important for government entities and organizations because citizens rely on trustworthy and timely information (Brynielsson et al., 2017).

Contingency theory recognizes there can be multiple publics with different needs (e.g., individuals needing rescue assistance vs. news media sharing event updates) and issues being addressed at the same time. The current study seeks to gain a richer and deeper conceptual understanding of the dynamic stances and organizational positioning that is required through communication during a disaster to the public types previously identified.

1.3 | Research purpose and question

The purpose of this case study is to examine USCG's Twitter communication during Hurricane Harvey. Specifically, we sought to see how communication during a disaster event moved on the continuum set forth by contingency theory. The contingency theory has been referred to as the "grand theory of public relations" in its exploration and understanding of how organizations make policy-level decisions (Coombs & Holladay, 2010). As a "grand theory," it has been adapted to specific areas of the discipline, particularly conflict management with a focus on organizational crises. However, there is limited research looking at the theory when applied to disaster communication. To expand the application of the theory, and to explore how the theory could aid the complex issues in both disaster communication research and practice, the study was guided by the overarching research question: "How did the USCG interact with the affected community on social media during Hurricane Harvey and what contingency theory stances characterize their response?"

2 | METHODS

2.1 | Sample

Tweets were collected from the Coast Guard's official Twitter handle, @USCG, using the Google Sheets add-on Twitter Archiver (G Suite Marketplace, n.d.). The tool allows users to create reoccurring collections once the criteria are entered. It also collects a number of tweets from the past, generally up to a period of 8 days. Using

this method, all tweets from the USCG, such as a reply, retweet or original tweet, were collected. The tweets collected for this study ($N = 315$) ranged from the dates 19 August 2017 to 9 September 2017, 1 week after Hurricane Harvey had passed. The initial "pull" was created on 24 August 2017 upon news of the impending hurricane. The timeframe of the tweets was determined based on the National Hurricane Center's naming of the storm from a Tropical Storm to a Hurricane, along with when the storm hit the Texas coast. A second "pull" was conducted after the event to verify that the tweets pulled represented a census population. In this, it was discovered that 13 fewer tweets were in the second pull, and a search of the USCG's Twitter account revealed the account deleted these tweets. These tweets are included in the analysis since it still represents what the USCG communicated at a particular time. Only tweets that pertained to Hurricane Harvey ($n = 273$) were examined using contingency theory variables.

In addition to analysing tweets, we took additional steps to understand the context of USCG communication opportunities and challenges. To do so, we reviewed the USCG funding guidelines and budget for 2017–2018 and the USCG Social Media Guidebook, along with confirmed details with the USCG deputy chief of social media.

2.2 | Codebook

We used a qualitative inductive approach to create keywords for each of the thirteen stances developed by the contingency theory (Liu, 2016). This was done by first creating a list of all of the contingency variables, along with a list of 5–8 keywords that represented thematic content of each stance based upon the literature and dictionary definitions of the stances (Table 1). When categories did not contain clear definitions in the literature, thematic keywords were added to definitions throughout the process to aid in coder understanding of the categories. If a tweet did not fall under a defined variable, coders as a group examined the tweet and determined the best action to take. The codebook and sheet utilized a presence/absence format, where each category had a column in a Google Sheet. For example, if a tweet had the presence of a category, a "1" was coded. If the category was not present in the tweet, a "0" was coded.

2.3 | Procedure and reliability

The coding for this project was done by two of the study's co-authors and a graduate student. The co-authors created the codebook and code sheet over the course of several training meetings where definitions and procedures were developed and agreed on. Tweets were coded for both content (i.e., contingency theory variables) and function (i.e., contained an image). Each coder coded approximately one-third of the final sample. Ten per cent of each coder's sample overlapped with the samples of the other two coders to provide a sample to test intercoder reliability. This reliability overlap sample was comprised of 33 tweets, 11 from each coder's individual portion.

TABLE 1 Thematic coding guidelines

Stance	Keywords that represent thematic content
Competing	Stating a win, Victory, Winner, The best, Indication of superiority, Wohoo we're great!, Showcasing, Look how much we have gotten done, Positive action has taken place
Litigation	Threat of litigation, Court, Lawsuit, Legal action, Case, Litigation
Arguing	Conflict, Argue, Contend, Contest, Making a case
Competition	Stating or showing how multiple organizations are trying to reach a goal that not all can achieve
Contending	Arguing, Confronting, Disputing
Compromising	Discussing an active situation of making a deal or settling for an outcome
Avoiding	Evade, Prevent, Abstain from, Averting, Deflect, Ward off, Refrain
Cooperation	Working together, Combined effort, Coordination, Partnership, Broad-based support, Response
Collaborating	Giving helpful information, Working together with another organization, Finding solutions, Requesting help, Showing a presence
Negotiating	Willingness to have a dialogue/communicate, Existence of ideological barriers, Settling differences, Achieve, Difference of opinion, Carryout, Got it done, Solve
Compromise	Discussing a win-win situation that occurred, Consciously aware that the outcome which occurred is less than expected, Outcome was acceptable but not optimal, Must have tangible outcomes, Consent given by both parties, Clear victory for one party, Acceptable solution
Capitulation	Ceasing to resist, Set of conditions given, Giving up a confrontational stance, Gives up
Apology and Restitution	I'm sorry, The USCG is sorry, Any expression of regret, Empathy statement, A request for forgiveness, We can only imagine, We know it might take a while

Using Krippendorff's alpha (Hayes & Krippendorff, 2007), reliability for the variables included in the study was as follows: competing ($\alpha = .80$), Collaborating ($\alpha = .73$), Before, During or After ($\alpha = 1.0$), Pertained to Harvey ($\alpha = 1.0$), Was a Reply ($\alpha = 1.0$) and Contained an Image ($\alpha = .95$). Within the reliability overlap, a small number of cases ($n = 4$) were coded as Cooperation, but reliability was not established. However, due to its closeness to collaborating on the contingency continuum (i.e., they are next to each other), we combined these two categories. The resulting variable for Collaborating/Cooperation had a reliability of .85.

3 | RESULTS

The data show the USCG's stance throughout Hurricane Harvey moved between both sides of the contingency continuum. During the span of 19 August through 6 September 2017, the USCG sent

a total of 315 tweets. Of this, 273 out of 315 tweets pertained to Hurricane Harvey, leaving 42 not related to the disaster. From 19 August through 24 August 2017, in the "before" phase, USCG sent 12 tweets. In the "during" phase, 25 August through 26 August, USCG tweeted 241 times. Lastly, after the hurricane was downgraded, 27 August through 6 September, USCG tweeted 62 times. Tweets that did not pertain to Hurricane Harvey were not coded for contingency variables. The 12 tweets from before Hurricane Harvey did not pertain to the hurricane. Therefore, our analysis focuses on tweets from the "during" and "after" phases.

To answer our research question, "How did the USCG interact with the affected community on social media during Hurricane Harvey and what contingency theory stances characterize their response?" frequency statistics of the stances used were analysed. Results indicate that collaborating (57.5%) was the most frequently employed, followed by competing (34.8%), contending (1.1%) and cooperation (6.2%). There were no examples of contending within the overlapping samples used to assess intercoder reliability, making a reliability estimation unavailable. We therefore excluded it from the analysis, focusing only on competing and collaborating/cooperating. Further, as these variables are each representative of the two sides of the contingency continuum, for the remainder of the paper, they will be referred to as accommodation (collaboration/cooperation) and advocacy (competing). Table 2 illustrates the frequency of these two sides of the continuum.

In addition to examining the overall use of the stances, we also explored whether the timing of tweets throughout the disaster's life cycle had an impact on what stance was used. A chi-square test was used to explore the relationship between the stance used and the hurricane timeframe. The test indicated a significant association between the period of time (during, after) and the contingency stance used (advocacy, accommodation) ($\chi^2(1) = 28.4, p < .001$). This suggests that the stance taken by the USCG was influenced by the disaster life cycle stage, with accommodation being used more frequently during the hurricane and advocacy being used more after. During Harvey, there were 229 USCG tweets pertaining to Harvey that adopted a stance along the contingency continuum, with more tweets focused on accommodating ($n = 163, 71.2%$) than advocacy ($n = 66, 28.8%$), a difference of approximately 42 per cent. After the disaster, there were fewer overall tweets pertaining to the disaster ($n = 40$), with more advocacy ($n = 29, 72.5%$) than accommodation ($n = 11, 27.5%$) by a difference of 45 per cent.

4 | DISCUSSION

This case study conducted a content analysis of USCG tweets to examine how the organization interacted with the affected community

TABLE 2 Contingency stances used throughout Hurricane Harvey

Contingency stance	Frequency	%
Accommodation	174	63.7
Advocacy	95	34.8

on social media during Hurricane Harvey and what contingency theory stances characterized their response. Additionally, to help provide context, we reviewed the USCG Social Media Guidebook and conducted a verification interview with the USCG deputy chief of social media. We found that by following its Social Media Guidebook, USCG created tweets along both sides of the contingency theory continuum.

This study demonstrates the usefulness of the contingency scale as an agile tool to analyse responses during dynamic disaster events such as Hurricane Harvey. During the disaster event and the immediate post-event, the USCG engaged in three primary contingency stances that represent the two opposite sides of the contingency continuum—accommodation and advocacy. USCG used tweets to meet two distinctive goals: to provide relief to victims of Harvey and as a tool for advocacy. In times of disasters, on social media, there are several types of publics, from individuals to government entities to the news media (Houston et al., 2015). During the disaster event of Hurricane Harvey, the USCG engaged these various publics with different stances along the contingency continuum. To illustrate the use of these stances, qualitative exemplars of Twitter communication by the USCG are provided in the next section.

4.1 | Advocacy and accommodation: twitter exemplars

Accommodation was used at times such as the USCG giving helpful information, demonstrating its work with another organization, notifying individuals whom to contact for assistance, requesting help or discussing solutions. Collaborating, an accommodative stance, was most prevalent during the disaster event. Retweets or mentions of FEMA and other government organizations such as the USCG Heartland and USCG Southeast were frequent during the disaster, showing how the government can use social media to demonstrate inter-organizational collaboration during disasters and showing why retweets are a codified element of the USCG's social media policy. Examples include the 28 August tweets: "RT@FEMA: The @distressline is a great resource if you were affected by #Harvey & need to talk to someone to help you cope. Call or text 24/7" and "RT@HoustonPolice: Anyone with a boat who can volunteer to help please call 713-881-3100 #HurricaneHarvey." The most prevalent form of accommodation, however, was direct replies to individual citizens. Tweets such as "Please call 202-372-2100 so we can get additional information" and "@XXXXX @houstonpolice Have they been rescued yet?" are examples. The name of the original user being replied to is omitted. The latter tweet highlights the USCG's engagement with individuals along with government entities, two key publics in disaster social media communication (Houston et al., 2015). It also highlights that citizens increasingly turn to social media to seek information (Jurgens & Helsloot, 2018; van Dijk, Zebel, & Gutteling, 2018).

People who required assistance during the storm and its immediate aftermath took to Twitter to tweet pleas for help at the USCG

and other emergency or government organizations. USCG responses to these outreach efforts contained only necessary information that usually required the user to take an additional step to get help. A standard response was, "Please contact 202-372-2100 to provide us additional information." While having timely and accurate responses is necessary when communicating during a disaster, we wonder whether only having a single communication channel (i.e., landline) during times of power outages and peak request times is the best solution. However, this approach was developed out of necessity, as the USCG deputy chief of social media shared that a natural disaster makes it challenging to manage information, so the organization needed to have a single channel of incoming rescue information. Still, the USCG had a clear focus on directly engaging with potentially impacted citizens of the Houston and Texas coast area. Even though this messaging was often an exact duplicate of messages to other people merely telling them which phone number to call, this strategy represents direct communication between a governmental organization and impacted citizens, and is similar to previous findings that organizations are likely to be formal in responses on Twitter during emergencies (Zhao et al., 2019).

Accommodation was also used by the USCG through two subcategories of collaboration, which included the USCG working with civilians or working with other agencies conducting rescues. A common example of tweets collaborating with civilians was "@xxxxx We are proud to serve ma'am. Thank you for providing the information we need to respond as soon as possible." The second subcategory was USCG showcasing its rescue work with other agencies. For example, throughout Harvey updates were sent with sentiments such as, "#USCG flood boats have rescued over 2,800 people affected by Hurricane #Harvey. Crews cont. to work with federal, state & local agencies."

In contrast, the strategies used for advocacy focused on showcasing the skills, abilities or accomplishments of the USCG. As shown in Table 1, tweets coded as competing focused on promoting the agency's wins, even if that meant not stating a direct competitor. Examples of this include USCG tweets such as, "#USCG crews make the 'impossible' possible in #harvey's aftermath," "A picture is worth a 1,000 words & these photos say it all. #USCG crews have not only been saving human lives, but animal lives too. #Harvey" and "As of this morning #USCG crews have rescued over 9,000 people & more than 1,000 pets total since #Harvey hit. Rescue missions continue." Through the advocacy stances, USCG was not directly competing with or mentioning other organizations, but communicatively positioning itself as an organization that was capable, timely and reliable, thus indicating superiority consistent with the competing stance. This reflects the definition provided by Jin, Pang, and Smith (2018) that advocacy means "arguing exclusively for one's own case" (p. 43). After the storm, this position was used to showcase the USCG's rescue efforts. Most of the tweets which took an advocacy stance showcased videos, pictures and external links. For example, pictures of pets were used to showcase the focus on dogs as family members equally deserving of the rescue efforts. An example of this is USCG's use of

advocacy in a 31 August tweet: “#USCG crews continue the round the clock rescues in Houston. They recently rescued a dog from a roof & a cat from a balcony. #Harvey,” which also included photographs of the two animals. This tweet also highlights communication to the broader Houston community. Updates on efforts underway were also coded as advocacy, such as the 28 August tweet: “The #USCG has 6 shallow water rescue crews from around the country ready to respond to potentially life-threatening flooding in LA. #Harvey.” A tweet from 31 August highlights the diversity of animals rescued: “While many #USCG crews are rescuing people & pets in TX, a @USCGSoutheast crew helped rescue a turtle. They appropriately named him #Harvey.” Tweets such as this could also be designed to attract attention from the press, a key public in disaster social media (Houston et al., 2015). Further, the USCG utilized the press as a key public to assist with advocacy, as highlighted through the use of retweets such as “RT:@CBSNews: Dramatic video from @USCG shows some of the many rescue efforts underway in Texas” and “RT:@ABC13Houston: ‘Coast guard is bringing crews from all over the nation.’ @USCG.”

The use of advocacy extends beyond the scope of the traditional crisis communication frameworks. While the USCG had a multitude of tweets which fell into the Houston et al. (2015) social media disaster framework of pre-event, during and post-event disaster communication recommendations, such as focusing on “(re) connecting community members following the disaster, sending and receiving requests for help, and learning about individuals affected by the disaster,” a number of tweets were also published to build and promote the organization's image of involvement and response.

4.2 | Limitations and future research

We want to note the shortcomings of this case study that should be addressed in future work. One of these shortcomings and opportunities for future work pertains to the theory's accommodation-advocacy spectrum. While the spectrum has well-defined points along it, such as “competing,” “collaborating,” “capitulation,” and “apology and restitution,” the theory itself does not define differences between each point, which results in creating a challenge in differentiation between the points themselves. There is limited literature that operationalizes stances on the contingency scale, which made coding a challenging process. Future research should focus on operationalizing the scales and developing intervals for each stance.

5 | CONCLUSION

To the best of our knowledge, this is the first study to empirically examine the fit between contingency theory of strategic conflict management and disaster communication. Our case study works to apply the theory as a way to analyse social media during times of a

disaster. Previous studies have shown how the contingency theory of strategic conflict management helps determine stance, which then drives goals and strategies of an organization. By extending the theory to examine communication during a disaster, our study provides an engine for developing agile stances that may accommodate the fluid and fast-paced communication during the disaster life cycle. In addition, we believe that our initial effort to examine how the continuum is used helps expand the breadth of disaster literature to acknowledge the dynamic needs of an organization while communicating about a disaster.

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