Routledge
Taylor & Francis Group

Journal of Applied Communication Research

ISSN: 0090-9882 (Print) 1479-5752 (Online) Journal homepage: https://www.tandfonline.com/loi/rjac20

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To cite this article: Brooke Fisher Liu, Lucinda Austin, Yen-I. Lee, Yan Jin & Seoyeon Kim (2020): Telling the tale: the role of narratives in helping people respond to crises, Journal of Applied Communication Research, DOI: 10.1080/00909882.2020.1756377

To link to this article: https://doi.org/10.1080/00909882.2020.1756377

Published online: 29 Apr 2020.

JOURNAL OF APPLIED COMMUNICATION RESEARCH
https://doi.org/10.1080/00909882.2020.1756377

Telling the tale: the role of narratives in helping people respond to crises

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ABSTRACT

During public health crises like infectious disease outbreaks, news media and governments are responsible for informing the public about how to protect themselves. A large body of health communication research finds that persuasive narratives motivate protective behaviors, such as intentions to vaccinate. In their seminal book on crisis narratives, Seeger and Sellnow (*Narratives of crisis: Telling stories of ruin and renewal*. Stanford University) theorized five narrative types: blame, renewal, victim, hero, and memorial. In this study, we tested how the public responds to crisis narratives about a hypothetical infectious disease crisis, modeled after narratives emerging from the 2014–2016 Ebola pandemic, through an online experiment with a U.S. adult sample ($N = 1050$). Findings showcase which crisis narratives positively affect public protective behaviors as well as emotional responses, assessments of information credibility, and attributions of crisis responsibility.

ARTICLE HISTORY
Received 14 May 2019
Accepted 19 December 2019

KEYWORDS
Crisis; disaster; health; infectious disease; narrative

Humans are natural storytellers. Compelling stories facilitate decision-making and action-taking (Fisher, 1984, 1985), including during crises. In health communication, persuasive narratives motivate behaviors, such as intentions to vaccinate, compared to didactic presentation of facts (e.g. Nan et al., 2015, 2017; Prati et al., 2012) . Persuasive narratives are 'stories with plots and a chronological sequence of events' (Shen et al., 2015, p. 105). In short, narratives are stories bound in time that connect events with characters and include messages about a topic (Kreuter et al., 2007). Persuasive narratives motivate target audiences to take desired preventative behaviors (Shen et al., 2015) through connecting audiences with characters who face a significant change or conflict (Ryan, 2007).

There have been at least 1346 peer-reviewed communication articles published on narratives in the past 20 years, with much of this research focused on health communication (Braddock & Dillard, 2016). Comparatively, there have been only a handful of studies on the role of narratives in crisis communication (e.g. Tyler, 2005; Venette et al., 2003; Yang et al., 2010; Zhao et al., 2018). In their seminal book on narratives of crisis, Seeger and Sellnow (2016) argued that crisis stories 'determine the larger meaning of crises and ultimately the lessons learned' (p. 16). Seeger and Sellnow further theorized five crisis

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narrative types described in detail below. In this study, we tested how the public responds to crisis narratives about a hypothetical infectious disease crisis, modeled after narratives emerging from the 2014–2016 Ebola pandemic, through an online experiment with a U.S. adult sample ($N = 1050$). In addition to testing the full set of Seeger and Sellnow's (2016) crisis narratives, our study is informed by prior research on the narrative persuasion process (e.g. Shen et al., 2015; Zebregs et al., 2015). A content analysis of narrative persuasion research found that the majority of research describes narratives in 'vague terms' with no 'clear connections' to established typologies (Dahlstrom et al., 2017, p. 4873), a significant limitation in prior research that we overcome with this study.

Literature review

Crisis communication narrative types

Narratives have been recognized as important persuasive tools for centuries (see, for example, Aristotle's *Poetics*). At least for a few decades, crisis communication scholars have argued that competing crisis narratives frame how people understand the past, present, and future (Heath, 1997; Heath & Palenchar, 2008), including how to assign blame for crises (Tyler, 2005; Venette et al., 2003) and the level of risk present in a crisis (Kim et al., 2018; Sastry & Lovari, 2017).

As Seeger and Sellnow (2016) noted, 'Disasters and the stories told about them carry meaning, encode lessons, and frame larger public and societal understanding of risks, warnings, and potential harm' (p. 5). Crisis narratives, therefore, are not the same as crisis response strategies, which focus on mitigating an organization's crisis responsibility (Coombs, 2015). In other words, organizational crisis response strategies are 'possible communication strategies' within a narrative response, but alone are not narratives (Venette et al., 2003, p. 219). A meta-analysis found that crisis communication response strategies are weakly associated with how the public assigns blame for crises (Ma & Zhan, 2016), leading to a call for research to look beyond blame as the key crisis communication outcome (Coombs, 2016). This study answers that call and examines how crisis narratives affect people's behavioral responses.

In their seminal book, Seeger and Sellnow (2016) theorized five crisis narrative types: blame, renewal, victim, hero, and memorial.

Blame narratives

Blame narratives answer the question of who is responsible for crises (Seeger & Sellnow, 2016) and can call for punishment (Wolfe, 2016). Some have proposed different types of blame narratives. For example, the human factor plot describes a crisis that could have been avoided or that was poorly dealt with because of human mistakes (Boudes & Laroche, 2009). The bureaucratic hydra plot tells the story of 'a poorly managed crisis due to organizational inertia and negligence' (Boudes & Laroche, 2009, p. 388).

Renewal narratives

Renewal narratives look forward through focusing on growth, learning, restoration, and healing and are best suited for crises that foster an immediate need for change (Seeger & Sellnow, 2016; Seeger & Ulmer, 2002). Sometimes, organizations' renewal narratives

compete with blame narratives circulated by others, such as news media (Seeger & Sellnow, 2016). Renewal occurs after crises when leaders inspire positive change through a prospective focus (Ulmer et al., 2007). Through renewal discourse, organizational leaders can build strong relationships with their communities (Xu, 2018). Additionally, renewal discourse offers a fresh start for an organization, community, or other group after a crisis occurs (Manzie, 2018; Wombacher et al., 2018).

Victim narratives

Victim narratives personify the harm caused by crises and are some of the most common crisis stories (Seeger & Sellnow, 2016). A victim is 'a person or group harmed, damaged, or made to suffer from an act, circumstance, agency, or condition that is generally not of his or her own making and is of an illegitimate or unfair nature' (Seeger & Sellnow, 2016, p. 100). The victim narrative may be part of the human-interest frame, which news media use to personify harm caused during crises (An & Gower, 2009; Cho & Gower, 2006).

Hero narratives

Hero narratives focus on protagonists who achieve crisis victories (Seeger & Sellnow, 2016). The hero story is 'closely associated with the great man/woman myth whereby a person through charisma, intelligence, strength, skill, or wisdom may have a disproportional impact on history' (Seeger & Sellnow, 2016, p. 114). In a crisis, there are three potential hero types: citizen/everyman hero, the first responder hero, and the leader hero (Seeger & Sellnow, 2016). Research has begun to examine organizational leaders as potential heroes during crises (Boin et al., 2013; Jong et al., 2016), but more research is needed on hero narratives.

Memorial narratives

Memorial narratives celebrate human resilience, contribute to healing, and create larger meanings about crises (Seeger & Sellnow, 2016). These narratives frequently are very public and have longevity, which allows them to communicate the core meaning of a crisis (Seeger & Sellnow, 2016). For example, the Oklahoma City National Memorial provides visitors with the opportunity to understand the terrorist attack, mourn the tragic losses, and experience hope for a better future (Veil et al., 2011).

In sum, there are five crisis narrative types: blame, renewal, victim, hero, and memorial. In this study, we empirically test all five narratives, along with a non-narrative control message, to determine how narratives affect people's responses to crisis information, including protective action decision-making, communicative behaviors, emotional coping, crisis responsibility attribution, and perceptions of crisis information credibility.

Narratives and protective actions

Health communication meta-analyses have found that narratives positively affect people's behavioral decision-making, including whether to take protective actions (Braddock & Dillard, 2016; Shen et al., 2015; Zebregs et al., 2015). Braddock and Dillard (2016) found that narratives positively affect self-oriented behavioral intentions (e.g. use sunblock in the future) and other-oriented intentions (e.g. recommend female relatives obtain

mammograms). When comparing narratives to statistical evidence in messages, Zebregs et al. (2015) found that narratives had a stronger impact on intentions to take protective behaviors, compared to statistical evidence. In a different meta-analysis, Shen et al. (2015) offered nuanced findings: Narratives were more effective at persuading people to take detection and prevention behaviors (e.g. cancer screening) than cessation behaviors (e.g. stop smoking). For example, research found that narratives can motivate people to exercise and track their food intake to combat obesity (Gray & Harrington, 2011; Knobloch-Westerwick & Sarge, 2015). Narratives can also motivate intentions to seek breast cancer screening (Occa & Suggs, 2016) and promote healthy fish consumption (Niederdeppe et al., 2019).

Of relevance to our study, a growing body of research has linked narratives to intentions to vaccinate and seek advice from healthcare providers. In one experiment, text-based narratives influenced participants' HPV risk perception, which increased intentions to vaccinate when vaccines were free of cost (Nan et al., 2017). Another experiment found that first-person narratives resulted in greater perceived risk of getting HPV vaccinations than third-person narratives. In turn, risk perception indirectly increased behavioral intentions to obtain free HPV vaccines (Nan et al., 2015). A third experiment found that present-oriented narrative messages (compared to future-oriented) and future-oriented non-narrative messages (compared to present-oriented) led to more favorable attitudes about the HPV vaccine, stronger intentions to vaccinate, and higher perceptions of vaccine efficacy (Kim & Nan, 2019). Other researchers have found narratives increased risk perception in the case of influenza vaccinations along with efficacy perceptions, but narratives did not increase intentions to vaccinate (compared to no message) (Prati et al., 2012). Therefore, considering Seeger and Sellnow's (2016) five crisis narrative types and the extant research on protective actions, we ask:

RQ1: How, if at all, do crisis narratives versus a non-narrative message (RQ1.1) and the five different crisis narratives (RQ1.2) affect people's protective action taking?

Narratives and communicative behaviors

During public health emergencies, government agencies ask the public to take specific protective actions (e.g. vaccination). Before complying with government guidance, individuals often seek crisis information, which they subsequently share with family and friends (Austin et al., 2012; Liu et al., 2015; Van Velsen et al., 2012). In the context of a public health emergency, research has found that participants seek consistent information from multiple, alternate sources before deciding how to respond (Anthony et al., 2013; Tai & Sun, 2007). In non-emergency situations, research has found that narrative messages affect people's information seeking behaviors (Barbour et al., 2016; Jain & Morgan, 2016; Knobloch-Westerwick & Sarge, 2015; Lareau & Miczo, 2017). For example, when exposed to narrative messages about weight loss, participants spent significantly more time reading weight-loss articles and increased their food intake tracking behaviors two weeks after the message exposure, compared to participants exposed to non-narrative messages (Knobloch-Westerwick & Sarge, 2015). No known research has examined how crisis narratives may affect information seeking behaviors. Therefore, we ask:

RQ2: How, if at all, do crisis narratives versus a non-narrative message (RQ2.1) and the five different crisis narratives (RQ2.2) affect further crisis information seeking?

Narratives and emotions

Emotions play a significant role in how the public processes crisis information (Jin, 2010; Jin et al., 2010), including whether they select a cognitive-oriented or emotion-oriented approach to process crisis information (Lu & Huang, 2018). In developing and testing the integrated crisis mapping model, scholars identified the following primary emotions that people experience during a variety of crisis types: anger, sadness, fright, and anxiety (Jin et al., 2010, 2012; Jin et al., 2016). Of note, how people perceive organizational crisis responsibility is a key predictor of their crisis emotions; additionally, people's crisis emotions can act as mediators in the relationship between their perceived organizational crisis responsibility and behavioral intentions (Choi & Lin, 2009; Coombs & Holladay, 2007; Kim & Niederdeppe, 2016). Through understanding people's emotions, organizations can select the most appropriate crisis response strategies (Brummette & Sisco, 2015; Jin et al., 2010, 2012). Minimal research has examined how crisis narratives, as an organizational message strategy, affect people's emotional responses to crises. One study found that the structure of organizations' crisis narratives reduced people's negative emotions. In turn, reducing negative emotions mediated the relationship between people's engagement in crisis narratives and their positive post-crisis perceptions (Yang et al., 2010). Therefore, this study asks:

RQ3: How, if at all, do crisis narratives versus a non-narrative message (RQ3.1) and the five different crisis narratives (RQ3.2) affect emotional responses to crisis information?

Narratives and crisis responsibility attribution

Prior research has noted that narratives can help the public decide how to assign blame for crises, but the connection between narratives and attribution of crisis responsibility has not been clearly understood (Boudes & Laroche, 2009; Seeger & Sellnow, 2016; Tyler, 2005; Venette et al., 2003). One study found that the structure of certain narratives reduced people's negative emotions about companies during crises, which in turn significantly affected people's positive organizational attitudes (Yang et al., 2010).

Related to attribution of responsibility, researchers found that media attributed responsibility through blame framing in linking the measles, mumps, and rubella (MMR) vaccine with autism (Holton et al., 2012). Additionally, Burgess (2019) posited through a theoretical review that narratives play a role in allocation of blame. However, limited research has examined the effects of different types of narratives and the attribution of crisis responsibility. Therefore, we ask:

RQ4: How, if at all, do crisis narratives versus a non-narrative message (RQ4.1) and the five different crisis narratives (RQ4.2) affect government responsibility attribution?

Narratives and crisis information credibility

Crisis narratives can help people determine whether to accept organizations' crisis accounts and assess source credibility (Park & Cameron, 2014). Research has found that people's engagement in crisis narratives is positively associated with company attitudes and supportive word-of-mouth communication intentions (Yang et al., 2010).

Additionally, people assess credibility of news media narratives based on a variety of factors, including whether media address issues of the greatest importance for the public (Szostek, 2018). However, source credibility does not always affect the response to health information. In the case of narratives about vaccination risks, research has found that participants' risk perception was not affected by information credibility cues (Haase et al., 2015). In the case of narratives about HIV, participants assessed government narratives as more credible than narratives from personal sources; however, participants had more positive attitudes and higher self-efficacy toward protective behaviors when reading the personal narratives than the government narratives (Neubaum & Krämer, 2015). Therefore, we ask:

RQ5: How, if at all, do crisis narratives versus a non-narrative crisis message (RQ5.1) and the five different crisis narratives (RQ5.2) affect perceived crisis information credibility?

Method

To answer the study's research questions a sample of 1050 nationally representative adults in the U.S was recruited by Qualtrics, a professional research firm. Participants received a small incentive for participation from Qualtrics. Prior narrative research has predominately employed student samples (Dahlstrom et al., 2017), while this study includes a large nationally representative sample. A priori and post hoc power analyses were conducted before and after data collection in G*Power, to ensure the sufficiency of our sample. Both analyses showed .99, which indicates sufficient power for the experiment design and shows 99% statistically significant difference between five groups (Cohen, 1992). The research team received Institutional Review Board (IRB) approval to conduct the study prior to data collection.

Crisis narrative scenario development

All participants received an introductory statement that asked them to imagine the U.S. was experiencing an infectious disease outbreak, which was widespread. Individuals were asked to imagine that their local community was at risk and that the disease was somewhat unpredictable, hard to control, and severe. Participants were then randomly assigned to one of six conditions: accounts of blame, stories of renewal, victim narratives, heroic tales, or memorials, or to a control condition. Participants in the control condition did not receive additional text, following the precedent of similarly designed narrative studies (e.g. Bakker et al., 2018; Falzon et al., 2015; Lemal & Van den Bulck, 2010; Prati et al., 2012).

Participants in the five narrative conditions were told to: 'Imagine you have encountered the following news story written by a local journalist about the outbreak situation in a community near yours.' They then received a news story matching the narrative type assigned based on Seeger and Sellnow's (2016) crisis narrative typology. The scenarios were modeled after real-life news stories[1] from infectious disease outbreaks with the names, details, and locations modified to reflect U.S. communities and settings for an unnamed disease. News narratives were selected for their ability to mimic real-life information and engage readers (Balint & Bilandzic, 2017). Each narrative was of similar length

(12 lines of text) and included a quote from a fictitious community resident with a gender-neutral name.

Participants and procedures

A total of 1050 participants participated in the online experiment. There were 510 males (48.6%), 536 females (51.0%), two who identified as other (0.2%), and two preferring not to answer (0.2%). The average age was 46.07 years old. The education from the majority was high school graduate or GED (26.4%), with the remainder being less than 12th grade (3.1%), some college but no degree (23.6%), associate's degree in college (12.1%), bachelor's degree (24.1%), master's degree (8.4%), and doctorate degree (2.3%). After reading one of the five crisis scenarios embedded with one of the five crisis narrative types or a crisis scenario without using any narrative, participants were asked to respond to a questionnaire with the following measures.

Measures

The questionnaire included items to assess participants' protective action taking intentions, crisis information seeking intentions, emotions, government responsibility attribution, and perceived information credibility.

Protective action taking

An adapted nine-item measure of the likelihood of protective action taking (Liu et al., 2015, 2016) was presented for participants to respond using a 7-point Likert-type scale where '1 = Very unlikely' and '7 = Very likely.' For instance, the items included: 'I would practice good hygiene behaviors as recommended, such as hand-washing and avoiding the spread of germs,' 'I would avoid contact with others who are sick,' and 'I would contact my local healthcare provider or pharmacy to get myself vaccinated as soon as possible.' The Cronbach alpha for protective action taking was .94 ($M = 6.00$, SD = 1.20). See Table 1.

Crisis information seeking

An adapted 19-item measure of crisis information seeking (Austin et al., 2012) was presented for participants to respond to the question of: 'If I were in this situation, I would

Table 1. Protective action taking scale.

Items	Mean	SD
I would practice good hygiene behaviors as recommended, such as hand-washing and avoiding the spread of germs	6.36	1.28
I would avoid contact with others who are sick	6.25	1.33
I would contact my local healthcare provide or pharmacy to get myself vaccinated as soon as possible	5.68	1.70
I would recommend that my friends and family members get vaccinated as soon as possible	5.64	1.72
If I experienced the disease symptoms, such as fever, chills, or rash, I would contact my healthcare provider	6.20	1.34
If a loved one or family member experienced the disease symptoms, such as fever, chills, or rash, I would contact my healthcare provider	6.11	1.44
I would follow health organizations' instructions step by step	5.93	1.40
I would tell others to follow health organizations' instructions	5.84	1.48
I would listen for more information from health organization sources	6.07	1.36

Table 2. Crisis information seeking scale.

Items	Mean	SD
If I were in this situation, I would look for more information from/by …		
A newspaper or newspaper website	4.80	1.87
Television	5.39	1.75
Local health organization websites	5.62	1.60
Federal health organization websites	5.47	1.71
Medical professionals' websites	5.51	1.65
Social media updates by federal health organizations	4.19	2.04
Social media updates by local health organizations	4.26	2.04
Social media updates by medical professionals	4.26	2.04
Talking to medical professionals I know via face-to-face and/or phone conversations	5.30	1.69
Emailing or texting medical professionals I know	4.31	1.96
Text message alerts from federal health agencies and local health agencies	4.56	1.94
Top search results generated by search engine when typing the outbreak keywords	4.81	1.83
Popular articles related to the outbreak, shared or reposted by social media friends or groups I follow	4.28	1.89
Viewing pictures related to the outbreak on social media posted by federal health organizations	4.18	1.99
Viewing pictures related to the outbreak on social media posted by local health organizations	4.14	1.98
Viewing pictures related to the outbreak on social media posted by medical professionals	4.13	2.00
Watching online videos posted by federal health organizations about the outbreak	4.42	1.93
Watching online videos posted by local health organizations about the outbreak	4.41	1.94
Watching online videos posted by medical professionals about the outbreak	4.39	1.96

look for more information from/by … ' The items were measured on a 7-point Likert-type scale where '1 = Strongly disagree' and '7 = Strongly agree.' The Cronbach alpha for crisis information seeking was .94 ($M = 4.65$, SD = 1.32). See Table 2.

Emotions

Participants were asked to indicate the likelihood that they would experience certain emotions toward what happened (as described in the outbreak scenario they read). Specifically, they rated the extent to which they were likely to feel each of the 11 emotions (if they were in the situation), identified from crisis and risk communication literature (e.g. Jin et al., 2012; Jin et al., 2014), on a 7-point Likert-type scale ranging from '1 = Very unlikely' to '7 = Very likely': Anger ($M = 4.20$, SD = 1.81), sadness ($M = 4.92$, SD = 1.66), fear ($M = 5.18$, SD = 1.72), sympathy ($M = 5.37$, SD = 1.54), surprise ($M = 4.12$, SD = 1.75), anxiety ($M = 5.22$, SD = 1.64), apprehension ($M = 5.03$, SD = 1.68), confusion ($M = 4.04$, SD = 1.85), compassion ($M = 3.88$, SD = 1.85), optimism ($M = 3.98$, SD = 1.83), and pride ($M = 3.06$, SD = 1.81). See Table 3.

Crisis responsibility attribution

A two-item measure of government responsibility attribution, adapted from Coombs and Holladay (2002), was presented for participants to respond using a 7-point Likert-type scale where '1 = Strongly disagree' and '7 = Strongly agree.' The items were 'In the infectious disease outbreak scenario I read, circumstances, not the government, were responsible' and 'In the infectious disease outbreak scenario I read, circumstances were to blame for the outbreak, not the government.' These items were reverse coded, so the higher number meant higher government responsibility attribution. The Cronbach alpha for government responsibility attribution was .81 ($M = 3.07$, SD = 1.51). See Table 4.

Table 3. Emotions scale.

Items	Mean	SD
Anger	4.20	1.81
Sadness	4.92	1.66
Fear	5.18	1.72
Sympathy	5.37	1.54
Surprise	4.12	1.75
Anxiety	5.22	1.64
Apprehension	5.03	1.68
Confusion	4.04	1.85
Compassion	3.88	1.85
Optimism	3.98	1.83
Pride	3.06	1.81

Perceived information credibility

A six-item measure of credibility of the infectious disease information, adopted from Meyer's (1988) media credibility scale emphasizing information believability, was presented for participants to respond to the question of 'The infectious disease information I just read was … ' The variable was measured on a 7-point Likert-type scale ($M = 4.98$, SD = 1.34; Alpha = .89). The six items included 'Not up-to-date/Up-to-date' ($M = 5.41$, SD = 1.59), 'Biased/Unbiased' ($M = 5.04$, SD = 1.76), 'Doesn't tell the whole story/Tells the whole story,' ($M = 4.37$, SD = 1.87), 'Inaccurate/Accurate' ($M = 5.00$, SD = 1.56), 'Cannot be trusted/Can be trusted' ($M = 5.01$, SD = 1.56), and 'Opinion/Fact' ($M = 5.06$, SD = 1.63). See Table 5.

Results

Univariate Analysis (ANOVA) and Multivariate analysis (MANOVA) separately were conducted to examine the effects of crisis narrative on emotional responses, perceived information credibility, government responsibility attribution, information seeking, and protective action-taking. This study also tested serial mediation models as post-hoc analyses centering on the role of significant emotional responses, perceived information credibility, and government responsibility attribution as a function of crisis narratives, connecting types of crisis narrative and behavioral intentional outcomes (e.g. information seeking and protective action), through a multiple regression analysis using the PROCESS macro (Hayes, 2017).

Effects of crisis narratives

Protective action taking

RQ1 sought to compare the effects of crisis narratives versus a non-narrative message (RQ1.1) and the effects between the five different crisis narratives (RQ1.2) on protective

Table 4. Government responsibility attribution scale (reverse coded).

Items	Mean	SD
In the infectious disease outbreak scenario I read, circumstances, not the government, were responsible	3.16	1.68
In the infectious disease outbreak scenario I read, circumstances were to blame for the outbreak, not the government	2.99	1.61

Table 5. Perceived information credibility scale.

Items	Mean	SD
The infectious disease information I just read was …		
Not up-to-date/Up-to-date	5.41	1.59
Biased/Unbiased	5.04	1.76
Doesn't tell the whole story/Tells the whole story	4.37	1.87
Inaccurate/Accurate	5.00	1.56
Cannot be trusted/Can be trusted	5.01	1.56
Opinion/Fact	5.06	1.63

action taking. The ANOVA results showed no significant effect of crisis narratives versus non-narrative [$F(1, 1048) = .00$, $p = .97$, partial $\eta^2 = .00$] nor between different narrative types [$F(4, 872) = .25$, $p = .91$, partial $\eta^2 = .00$].

Information seeking

RQ2 sought to compare the effects of crisis narratives versus a non-narrative message (RQ2.1) and the effects between the five different crisis narratives (RQ2.2) on further crisis information seeking. The ANOVA results showed no significant effect of crisis narratives versus non-narrative [$F(1, 1048) = 1.69$, $p = .19$, partial $\eta^2 = .00$] nor between different narrative types [$F(4, 872) = 1.09$, $p = .36$, partial $\eta^2 = .01$].

Emotions

RQ3 sought to compare the effects of crisis narratives versus a non-narrative message (RQ3.1) and the effects among the five different crisis narratives (RQ3.2) on emotional responses to the crisis information about an infectious disease outbreak. The MANOVAs revealed neither a significant difference between the effects of crisis narratives or a non-narrative message [Wilks' $\lambda = .99$, $F(11, 1038) = 1.29$, $p = .23$, partial $\eta^2 = .01$] nor any significant effect of each type of crisis narrative on emotional responses [Wilks' $\lambda = .93$, $F(44, 3299.75) = 1.35$, $p = .06$, partial $\eta^2 = .02$]. Follow-up ANOVA results revealed a significant effect of crisis narrative types on sadness [$F(4, 872) = 2.90$, $p < .05$, partial $\eta^2 = .01$]. Additionally, pairwise comparisons showed that the victim crisis narrative was significantly different in felt sadness than the hero narrative (Mean difference = .54, SE = .17, $p < .05$). The victim crisis narrative ($M = 5.20$, SE = .12) induced more sadness than the hero narrative ($M = 4.65$, SE = .12).

Crisis responsibility attribution

RQ4 sought to compare the effects of crisis narratives versus a non-narrative message (RQ4.1) and the effects between the five different crisis narratives (RQ4.2) on government responsibility attribution. First, ANOVA results revealed a significant difference in the effect of crisis narratives versus a non-narrative message on crisis responsibility attribution [$F(1,1048) = 5.01$, $p < .05$, partial $\eta^2 = .01$]. The results of pairwise comparisons showed that participants who read crisis narratives had higher crisis responsibility attribution toward the government ($M = 3.12$, SE = .05) than participants who did not read any crisis narrative ($M = 2.84$, SE = .11). Second, ANOVA results revealed a significant effect of crisis narrative type on government responsibility attribution [$F(4, 872) = 10.48$, $p < .001$, partial $\eta^2 = .05$]. The results of pairwise comparisons showed significant differences between the blame narrative and other narratives (renewal narrative, Mean difference

= .84, SE = .16, $p < .001$; victim narrative, Mean difference = .62, SE = .16, $p < .001$; hero narrative, Mean difference = .88, SE = .16, $p < .001$; and memorial narrative, Mean difference = .81, SE = .16, $p < .001$). Participants exposed to the blame narrative ($M = 3.76$, SE = .11) attributed the most responsibility to the government compared to those exposed to the victim narrative ($M = 3.14$, SE = .11), memorial narrative ($M = 2.95$, SE = .11), renewal narrative ($M = 2.92$, SE = .11), and hero narrative ($M = 2.89$, SE = .11).

Perceived information credibility

RQ5 sought to compare the effects of crisis narratives versus a non-narrative message (RQ5.1) and the effects between different crisis narratives (RQ5.2) on perceived crisis information credibility of an infectious disease outbreak. ANOVA results revealed a significant difference in the effect of crisis narratives versus a non-narrative message [$F(1, 1048) = 4.58$, $p < .05$, partial $\eta^2 = .00$]. Participants who read the blame narrative ($M = 4.65$, SD = 1.32) perceived the crisis information as less credible than those exposed to crisis information without any narrative ($M = 5.18$, SD = 1.38). Additional ANOVA results revealed a significant effect of crisis narrative type on perceived crisis information credibility [$F(4, 872) = 2.94$, $p < .05$, partial $\eta^2 = .01$], specifically between the renewal and blame crisis narratives (Mean difference = .45, SE = .14, $p < .05$). Participants exposed to the renewal crisis narrative ($M = 5.10$, SE = .10) perceived the crisis information as more credible than those exposed to the blame narrative ($M = 4.65$, SE = .10).

Mediation models for crisis narratives

As direct effects of narratives on information seeking and protective action taking were not present, we conducted further analyses to see if effects of narratives on crisis behaviors were mediated by other variables, including emotion, information credibility, and attribution of responsibility. Included below are results from mediation models for the specific narrative types.

Through these post-hoc analyses, we sought to examine whether, and, if so, how participants' emotional responses to crisis narratives, crisis responsibility attribution, and perceived crisis information credibility, as well as their information seeking, mediated the relationship between crisis narratives and protective action taking, respectively. The results of mediation models revealed the following factors as the sequential mediators for the relationship between crisis narratives and proactive action taking: emotional responses to crisis narratives, perceived crisis information credibility, and information seeking. The following section reports these mediation models individually.

Mediators of emotional response and information seeking

Based upon significant findings detected in the effects of crisis narratives (RQ 3.2), this study further examined how sadness and information seeking mediated the relationship between the victim narrative and protective action-taking, as well as the hero narrative and protective action taking, respectively.

Victim narrative. This study tested a model that examined how the type of crisis narrative (dummy coded: 1 = victim narrative, 0 = other types of crisis narratives) influenced protective action taking through two sequential mediators: sadness and information seeking. The

overall model showed a significant serial mediation [point estimate = .03, SE = .01, 95% CI = (.01, .06)]. The model explained 0.5% of the variance in sadness. The victim crisis narrative as a potential predictor yielded a significant coefficient ($b = .32$, $p \leq .05$). The model explained 11.2% of the variance in information seeking. There was no significant direct effect of the victim crisis narrative. However, sadness ($b = .26$, $p \leq .001$) was a significant predictor. Finally, the model explained 32.5% of the variance in protective action taking. There was no significant direct effect of the victim crisis narrative. However, sadness ($b = .19$, $p \leq .001$) and information seeking ($b = .39$, $p \leq .001$) were predictors for protective action taking. In sum, the findings suggest that the relationship between the victim crisis narrative and protective action taking is fully mediated by sadness, which in turn, mediates information seeking.

Hero narrative. This study also tested a model that examined how the hero crisis narrative (dummy coded: 1 = hero narrative, 0 = other types of crisis narratives) influenced protective action taking through two sequential mediators: sadness and information seeking. The overall model showed a significant serial mediation [point estimate = –.03, SE = .02, 95% CI = (−.07, −.01)]. The model explained 0.5% of the variance in sadness. The hero crisis narrative as a potential predictor yielded a significant coefficient ($b = –.32$, $p \leq .05$). The model explained 11.01% of the variance in information seeking. There was no significant direct effect of the hero crisis narrative; however, sadness ($b = .26$, $p \leq .001$) was a significant predictor of information seeking. Finally, the model explained 32.6% of the variance in protective action taking. There was no significant direct effect of the hero crisis narrative; however, sadness ($b = .19$, $p \leq .001$) and information seeking ($b = .39$, $p \leq .001$) were predictors for protective action taking. In sum, the findings suggest that the relationship between the hero crisis narrative and protective action taking is fully mediated by sadness, which, in turn, mediates information seeking.

Mediators of perceived crisis information credibility and information seeking

Based upon significant findings detected in the effects of crisis narratives (RQ 5.2), this study further examined how perceived crisis information credibility and information seeking mediated the relationship between the blame narrative and protective action taking, as well as the renewal narrative and protective action taking. However, the results revealed that, while perceived crisis information credibility and information seeking were two sequential mediators for the relationship between the blame crisis narrative and protective action taking, they did not mediate the relationship between the renewal narrative and protective action taking.

Blame narrative. This study further examined whether, and, if so, how participants' perceived crisis information credibility about the outbreak and their information seeking mediated the relationship between crisis narrative types and protective action taking, respectively. Based upon significant findings detected in the effects of crisis narratives, this study examined how perceived crisis information credibility and information seeking mediated the relationship between the blame narrative and protective action taking. The overall model showed a significant serial mediation [point estimate = −.04, SE = .01, 95% CI = (−.06, −.02)]. The model explained 1.15% of the variance in perceived

crisis information credibility about the outbreak. The blame crisis narrative, as a potential predictor, yielded a significant coefficient ($b = -.40$, $p \leq .001$). The model explained 5.90% of the variance in information seeking. The blame crisis narrative ($b = .23$, $p \leq .05$) and perceived crisis information credibility ($b = .24$, $p \leq .001$) were significant predictors for information seeking. Finally, the model explained 30.32% of the variance in protective action taking. There was no significant direct effect of the blame crisis narrative; however, perceived information credibility ($b = .19$, $p \leq .001$) and information seeking ($b = .42$, $p \leq .001$) were predictors for protective action taking. In sum, the finding suggests that the relationship between the blame crisis narrative and protective action taking is fully mediated by perceived information credibility, which, in turn, mediates information seeking.

Discussion

Better understanding how people perceive and respond to narratives about health crises can help communicators design intervention campaigns. As Liu and Fraustino (2014) observed, there is a notable gap in understanding how crisis communication can protect people because most researchers have focused on how crisis communication can protect organizations' reputations. Accordingly, Coombs (2016) called for crisis messaging research that goes beyond organizational reputation repair strategies. Seeger and Sellnow (2016) proposed a promising theoretical framework on crisis narratives to understand how crisis messages can contribute to the public's and organizations' well-being during and after crises occur.

Overall findings from this research revealed that crisis narratives for an infectious disease outbreak had limited direct effects on information seeking and protective action taking; however, factors such as emotions, attribution of responsibility, and information credibility helped to explain the relationship between certain types of narratives and recommended protective behaviors and information seeking. While it may be difficult to enact behavior change during public health crises, better understanding these factors can enhance tailored communication.

Emotions and narratives

Findings revealed that, overall, narratives, compared to no narrative, did not elicit a significantly different emotional response to crisis information during an infectious disease outbreak. However, some differences for specific narrative types and emotions were revealed. Victim narratives elicited significantly more sadness than hero narratives; however, sadness induced by both victim and hero narratives affected information seeking and subsequent protective action taking. The results here suggest that victim and hero narratives may lead to protective action taking during an infectious disease crisis, by way of sadness and information seeking. Although neither of these narrative types had a direct effect on protective action taking, for those who experienced sadness, they were more likely to seek information and then take protective actions. Furthermore, the mediation model analyses for both the victim and hero narratives revealed that the relationship between these narratives and protective action taking is fully mediated by two sequential mediators: sadness and information seeking.

Prior research suggests that victim narratives promote sympathy, similar to sadness, as individuals identify with the plight of the victim; this sympathy can lead to behavioral and social change (Seeger & Sellnow, 2016). Our research adds that this is also the case for hero narratives. While hero narratives may be more associated with hope and optimism, Seeger and Sellnow (2016) stated that victim narratives are closely related to hero narratives in that, 'the hero character in the crisis story usually makes some personal sacrifice or takes some personal risk in response to the crisis' (p. 14).

Sadness can drive individuals to want to change their circumstances and may also drive sharing of resources and information (Polman & Kim, 2013). On risk topics, such as climate change, negative affect has been shown to most heavily influence information seeking (Yang & Kahlor, 2013). Sadness, specifically, is a low-certainty emotion, which may further drive the need for additional information in a crisis context and aid in systematic, in-depth processing of information (Kim & Cameron, 2011; Lu & Huang, 2018).

Of note, the victim and hero narratives feature human actors; whereas, the other narrative types (blame, renewal, and memorial) are not specifically about human actors. Past research has found that first-person narratives result in greater perceived risk of contracting HPV than third-person narratives. In turn, risk perception indirectly increased behavioral intentions to obtain free HPV vaccines (Nan et al., 2015). Future crisis communication research should test whether narratives that include human actors vs. organizations induce different responses. Additionally, prior research has theorized three potential hero types in crisis narratives: citizen/everyman hero, the first responder hero, and the leader hero (Seeger & Sellnow, 2016), which should be tested in future research.

Crisis responsibility attribution and narratives

Not surprisingly, participants who read the blame narrative attributed more responsibility to the government than those exposed to the other narrative types and the no narrative condition.

Governments are the primary source for protective action information during public health crises (Kim & Liu, 2012), especially since media inadequately provide important protective action information (Sell et al., 2018). During public health crises, it is imperative that the public trust the government, rather than blame them for the crisis, given that the government is the primary source of protective action information. Therefore, it is critical for governments to earn public trust during public health emergencies. Our findings about attribution of crisis responsibility and the blame narrative allude to the importance of organizations being the first to release their own crisis story or stealing thunder (Arpan & Pompper, 2003; Claeys, 2012; Lee, 2016), rather than allowing media to set a potential blame narrative about a crisis.

Perceived information credibility and narratives

Analyses revealed that the relationship between the blame crisis narrative and protective action taking is fully mediated by two sequential mediators: information credibility and information seeking. Prior research has urged scholars to look beyond organizational crisis reputation repair strategies to understand how crisis communication affects public

responses (Coombs, 2016). Here, we find that blame narratives do not prohibit protective action taking, but in order to take protective actions, people need to obtain credible information through their own information seeking. Future research is needed to explore how people vet the credibility of crisis information, as some scholars have begun to theorize (Dailey & Starbird, 2014; Lu, Jin, Eaddy, et al., 2019; Lu, Jin, & Kim, 2019).

Not surprisingly, participants who read the blame narrative perceived the crisis information as less credible than those exposed to crisis information without a narrative. Furthermore, participants who were exposed to the renewal crisis narrative perceived the crisis information as more credible than those exposed to the blame narrative. Prior research has noted that the renewal narrative offers a positive, future-oriented message that facilitates crisis recovery through building positive organizational-community relationships (Ulmer et al., 2007; Xu, 2018). We believe that this is the first study to connect the renewal narrative to positive assessments of crisis information credibility, validating the positive effects of the discourse of renewal on people experiencing crises. Furthermore, in this study, we showed how the renewal narrative can facilitate positive coping responses during crises; past research has emphasized the role of the discourse of renewal in recovery crisis communication (e.g. Manzie, 2018; Ulmer et al., 2007; Wombacher et al., 2018).

Implications for practice

Crisis narratives have important effects on how members of the public respond to crises, as theorized by Seeger and Sellnow (2016). Our study found that for communicating urgent information to the public about an infectious disease outbreak, victim and hero narratives serve as an effective vehicle to foster information seeking and subsequent action taking, provided individuals experience sadness when exposed to a narrative about an infectious disease outbreak. These narratives may be especially effective in situations where complex processing of crisis information is demanded. Given that news media frequently employ human interest frames to cover crises and health information (An & Gower, 2009; Hong, 2013), public health organizations may consider providing news media with compelling and accurate hero and potentially victim narratives to productively shape media coverage and motivate appropriate public behavioral responses.

Additionally, we found that participants who read blame narratives attributed more government responsibility for the tested infectious disease outbreak than those exposed to other narrative types and no narrative. Furthermore, we found that the blame narrative does not prohibit protective action taking, but, in order to take protective actions, individuals need to obtain credible information through their own information seeking. Our findings suggest that public health authorities should not be overly distracted if media coverage focuses on assigning blame. Instead, public health authorities should continue to focus on providing information about protective actions members of the public can take to keep themselves safe, especially though outlets that enables individuals' proactive information seeking. The one caveat to this recommendation is when blame narratives may lead to calling into question public health authorities' credibility, which we further discuss below.

During some public health crises, news media negatively assess the credibility of responding organizations, such as a *New York Times* article with the headline 'How the

response to Zika failed millions' (McNeil, 2017). In these cases, our study suggests that the renewal narrative is a promising vehicle for supporting crisis information credibility. We found that participants exposed to the renewal crisis narrative perceived the crisis information as more credible than those exposed to the blame narrative. Therefore, public health authorities could disseminate information to news media and directly to the public that supports renewal narratives, if their credibility is called into question during infectious disease outbreaks. Such information would focus on growth, learning, restoration, and healing (Seeger & Sellnow, 2016; Seeger & Ulmer, 2002).

In sum, insights from our study expand the communication strategy toolbox public health authorities can consider using. In the context of communicating outbreak information to the public, different narratives (or a combination of them) might provide unique communicative opportunities to facilitate and enhance health news coverage by supplying timely, accurate, and engaging information with the compelling power of storytelling to motivate the public to take preventative actions.

Limitations and conclusion

This study is limited by several factors. First, the study only examined one type of infectious disease outbreak and thus the findings are not generalizable to other outbreaks or other types of crises. Likewise, the findings only apply to the U.S. Second, some items included in the protective action taking scale are relatively skewed, which might have caused limited variance of the measure and resulted in fewer opportunities to observe any significant difference. Future research needs to use enhanced protective action taking measures to minimize item skewness, which might afford higher likelihood to detect difference directly caused by crisis narratives. Third, the study used text-based narratives as a first step in testing Seeger and Sellnow's (2016) crisis narrative framework. However, individuals may need to see and hear crises to take action, especially individuals that are more likely to process information heuristically (Green & Fitzgerald, 2017; Lu et al., 2012). Fourth, the study tested media narratives because news media play a prominent role in distributing information during an infectious disease outbreak (Sell et al., 2018). Additionally, each narrative type was represented by a single message and the stimuli presented a hypothetical situation. As the control condition did not include a narrative, and was therefore shorter in length, the findings could potentially be different if control messages were of similar length to the narratives (e.g. Gebbers et al., 2017; Niederdeppe et al., 2014). Furthermore, future research should test other credibility scales (e.g. Callison, 2001; Hu & Sundar, 2010) to validate our results. Future research also is needed to develop credibility scales for the crisis narrative of public health. Lastly, this study explored a limited set of potential outcomes for different narratives through the variables measured (e.g. protective action taking, information seeking, emotions, responsibility attribution, and information credibility).

Future research is needed to test the effects of crisis narratives from organizations, such as government agencies and from individuals, such as family members and friends, in addition to the media narratives studied here, as narratives received from different sources, or through different channels (e.g. social media, directly from organizations, or from offline sources) may differently influence outcomes. As Houston and Buzzanell (2018) noted, communication from and among family, organizational systems, and

media can contribute to disaster resilience. Furthermore, future research is needed to test different types of narratives within each of the five narrative types identified by Seeger and Sellnow (2016). As noted in the literature review, prior research proposed different types of blame narratives (Boudes & Laroche, 2009) and hero narratives (Seeger & Sellnow, 2016).

A third promising area for future research is examining the potential relationship between various narrative types (e.g. blame, renewal, hero, and victim), different outcomes (e.g. moving forward positively from crisis as a form of renewal), and additional factors that are important for how individuals respond to crises (e.g. self-efficacy, response efficacy, and crisis efficacy) (Avery & Park, 2016). Most importantly, future research is needed to test the effects of crisis narratives in crises beyond infectious disease outbreaks.

In sum, our findings showcase which crisis narratives positively affect public protective behaviors, emotional responses, assessments of information credibility, and attributions of crisis responsibility during a public health crisis. During major crises, like infectious disease outbreaks, governments often heavily invest in communication interventions, working closely with news media. Through continuing this line of research on crisis narratives, we can provide research-supported guidance for how message strategies can best protect public health during trying times.

Note

1. News stories modeled after community journalism stories on http://archive.eboladeeply.org.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by a seed grant from the Hussman School of Journalism and Media at the University of North Carolina at Chapel Hill.

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