

Telling Global Public Health Stories: Narrative Message Design for Issues Management

Communication Research
1–34

© The Author(s) 2015

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/0093650215579224

crx.sagepub.com



Joshua B. Barbour¹, Marissa J. Doshi²,
and Leandra H. Hernández³

Abstract

In consultation with the U.S. Centers for Disease Control and Prevention's Center for Global Health (CDC CGH), this study compared narrative and non-narrative message designs for global public health initiative issues management. A multiple-message experimental design prompted participants ($N = 669$) to read a message about a CDC CGH initiative, and measured perceptions of agency reputation, support for a global public health mission, and intentions to share information. Narrative message design had direct effects on intentions to share the message interpersonally and through social media and indirect effects on the outcomes through perceptions of message features and mediating states (i.e., story structure, understanding, personal relevance, information overload) and transportation. The study contributes to theory and practice by confirming the mediating role of transportation, building on a message features approach to the study of narrative persuasion, and speaking to the challenges of issues management in global public health.

Keywords

narrative persuasion, transportation theory, issues management, global public health, actional legitimacy

¹The University of Texas at Austin, USA

²Hope College, Holland, MI, USA

³National University, San Diego, CA, USA

Corresponding Author:

Joshua B. Barbour, Department of Communication Studies, The Moody College of Communication, The University of Texas at Austin, 2504A Whitis Ave. (A1105), Austin, TX 78712-0115, USA.

Email: barbourjosh@utexas.edu

Governmental agencies rely on public affairs messaging to address multiple important and, at times, contradictory goals such as communicating governmental initiatives, repairing credibility image after crisis, participating in public processes, facilitating collaboration, and supporting democracy and governance (Heath, Waymer, & Palenchar, 2013). In the United States, governmental organizations may not engage in the advocacy typical of public relations (Gelders & Ihlen, 2010). Nonetheless, they do need to share information about their initiatives and communicate the legitimacy, importance, and appropriateness of those initiatives (Boyd, 2000; Lammers, 2011; Lammers & Barbour, 2006).

The communication challenge is particularly difficult for agencies involved in global public health because of the reach, importance, and scientific complexity of their missions. Promoting global public health is a practical and moral necessity for the U.S. government if only because it has consequences for public health at home: As recent public health crises such as the global Ebola outbreak have made clear (Tavernise, 2014), threats to public health do not respect national boundaries, and global public health efforts can improve the reputation and relationships of the U.S. abroad (Guerrant, 1998). Furthermore, the promotion of global public health is a responsibility as well as a necessity (Garrett, 2000). However, the interconnectedness of global and local public health may not always be clear to stakeholders (Schieber, Gottret, Fleisher, & Leive, 2007). Further complicating issues management for global public health initiatives, public affairs messaging about the challenges and successes of public health initiatives requires communicating effectively about science despite scientific uncertainties and limited scientific literacy (Avraamidou & Osborne, 2009; Robinson & Newstetter, 2003).

Narratives may be particularly fitting for communicating about global public health, because they make complex policy realms more accessible. We define narratives as messages that have a beginning, middle, and end (i.e., a story structure), a cast of characters with whom connections can be formed, and vivid imagery (Green & Brock, 2000; Green, Strange, & Brock, 2002). We tell and retell stories to teach, persuade, understand, and reason (Browning, 1992; Dailey & Browning, 2014; Gerrig, 1993). Narrative offers generally accessible rubrics for making judgments (cf. narrative probability and fidelity; Fisher, 1984). Narratives are useful for communicating about public policy (Heugens, 2002; Niederdeppe, Bu, Borah, Kindig, & Robert, 2008), because they can raise awareness of policy issues by making them more concrete and visceral (Sharf, 2001), be used to communicate during crisis (Yang, Kang, & Johnson, 2010), or reduce counterarguing (Niederdeppe, Shapiro, & Porticella, 2011) even for controversial policies (Igarua & Barrios, 2012; Slater, Rouner, & Long, 2006). Narratives may also work across the variations in science literacy (Avraamidou & Osborne, 2009) that make communicating about global public health issues more difficult.

However, using narratives to persuade may have unintended consequences in issues management (Heugens, 2002) and policy making (Sharf, 2001). For example, narratives may improve awareness without highlighting appropriate solutions; cast problems as driven by individual agency while obscuring the “complexity of economic,

structural, behavioral, and social factors” (Niederdeppe et al., 2008, p. 496) or disempower those they seek to help (Dubriwny, 2012). Although persuasiveness of narratives has been well demonstrated in the communication of health information (Kreuter et al., 2007; Zebregs, van den Putte, Neijens, & de Graaf, in press) and entertainment-education (Tukachinsky & Tokunaga, 2013), evidence is needed for the efficacy of narrative in issues management. Narrative persuasion research in the realms of entertainment-education and health information campaigns has tended to focus on individual health knowledge, attitude, and behavioral outcomes (Hinyard & Kreuter, 2007; Tukachinsky & Tokunaga, 2013) and not political or policy implications (Niederdeppe et al., 2008; Niederdeppe, Shapiro, & Kim, 2014; Weber & Wirth, 2014). The consequences for the organizations using narrative may be substantial and merit investigation (Yang et al., 2010).

Issues Management and the Legitimacy Gap in Global Public Health

This study contributes to the growing literature on narrative persuasion by extending the work to issues management (Boyd, 2000; Heath et al., 2013) and speaking to the practical problems of public affairs in global public health. This study was developed in collaboration with communication professionals at the Centers for Disease Control and Prevention’s Center for Global Health (CDC CGH). We describe our work with the CDC, because this study provides an exemplar of engaged scholarship (Barge & Shockley-Zalabak, 2008). Our engagement grounded the study in the competing theories of practice relevant for the professionals at the CDC CGH and guided the application and development of communication theory to inform organizational messaging strategy.

Building the Case for Narrative in Global Public Health Issues Management

Although the evidence base for narrative persuasion is quite strong (Green, 2008; Hinyard & Kreuter, 2007; Kreuter et al., 2007), a preference for didactic, expository, or non-narrative forms persists in medical (Murphy, Frank, Chatterjee, & Beazconde-Garbanati, 2013), scientific (Avraamidou & Osborne, 2009), and public policy contexts (Niederdeppe et al., 2008). For example, arguing for the need for comparative studies of narrative and non-narrative in health and policy contexts, Murphy et al. (2013) wrote, “when asked to explain the relative absence of narrative health messages being employed in the United States, the medical establishment often points to what they consider to be a lack of rigorous evidence” (p. 118).

Competing ideas about narrative versus non-narrative forms was a key feature of our case too. At the 2011 Aspen Conference on Engaged Scholarship, a team of communication professionals from the CGH explained that they needed evidence to convince internal stakeholders of the efficacy of a narrative strategy. These stakeholders were concerned that using narrative might dilute or confuse the CDC’s science information

or compete with messaging central to the organization's identity such as the *Morbidity and Mortality Weekly Reports*, or worse, degrade the agency's reputation. Non-narrative forms were viewed as objective and therefore more credible than narratives, which were seen as anecdotal and subjective, and consequently unscientific.

Scientific excellence and technological acumen are central to the CDC's organizational identity as effective and legitimate (Robinson & Newstetter, 2003). The CGH professionals argued that to make the case for using narrative, they needed evidence regarding its effectiveness *over and above* non-narrative for communicating public health initiatives. Put another way, they were negotiating competing theories of communication practice reflecting different beliefs about communication effectiveness and the relative efficacy of narrative and non-narrative forms.

Their situation demonstrates a key idea in organizational identity scholarship: Perceptions of the external face of the organization by internal stakeholders complicate issue management efforts (Cheney, Christensen, & Dailey, 2014). For the CGH professionals, if arguments could be made supportive of the utility of a narrative strategy, they could provide a foundation that could later be used to influence internal policy that would open an avenue for the use of narrative to augment their existing messaging approaches. In this case, a concern for the reputation of the agency in general complicated their efforts to communicate about the day-to-day, mundane public health efforts so important to their ongoing missions.

Actional Legitimacy and Issues Management

The relevant theoretical distinction is between institutional and actional legitimacy (Boyd, 2000). Institutional legitimacy involves a concern for the continued existence of the organization, which is most commonly at stake during or after a crisis wherein organizations must "reestablish their legitimacy with publics" (Boyd, 2000, p. 346). Actional legitimacy reflects a concern for the utility and responsibility of specific corporate actions. Comparisons of narrative and non-narrative form should be particularly relevant here too, because actional legitimacy focuses on specific organizational initiatives, begging the question of how (or if) organizations should tell the story of those initiatives (Boyd, 2000). In the pursuit of actional legitimacy, organizations are not seeking approval for a "place in the social structure" (institutional legitimacy) but instead "approval from critical publics" for specific policies or actions (Boyd, 2000, pp. 348-349). The day-to-day establishment of actional legitimacy is integral to the management of relationships with stakeholders on which organizations depend (Lammers & Barbour, 2006). Actional legitimation efforts are also important because organizations encounter day-to-day, issues management problems more frequently than the crisis- and broad-organization-image-focused problems of institutional legitimacy that are more typically the focus of issues management research (Boyd, 2000).

For example, reflecting more of a concern for institutional legitimacy, existing research on the public face of the CDC tends to focus on their effectiveness during times of crisis (e.g., Vanderford, 2003), not day-to-day issues management. Although U.S. agencies may not engage in lobbying *per se*, they do still have a concern for

actional legitimacy in the sense that they want to convince stakeholders that their efforts have value. The CDC is already consistently rated as one of the most credible and trustworthy government agencies (Jones & Saad, 2013) though that reputation has been questioned during the recent Ebola public health crisis (Tavernise, 2014). The CGH communication professionals faced problems of actional legitimacy. They needed to make the case for the day-to-day global public health work of the CDC CGH.

Actional legitimacy efforts are important but also difficult, in particular, in complex policy contexts such as making the case at home for the U.S.'s global public health efforts. Although global health is a major focus of the United Nations Millennium Development Goals, which act as a guide for the aid-related efforts of most countries and agencies, realizing these goals is an ongoing challenge (Schieber et al., 2007). Part of the challenge facing major donor countries such as the United States is criticism about health-related foreign spending when domestic health inequalities persist (Fuster & Kelly, 2010). However, the CDC (2014) and other experts (Guerrant, 1998) have pointed out that (a) globalization and the concurrent risk of worldwide pandemics make global health a domestic concern and that (b) above and beyond the risk of pandemics, reducing disease occurrences before they cross borders reduces the burden on domestic health care. Global public health efforts can also increase goodwill for the U.S. overseas, improving international relationships. Their challenge thus speaks to key theoretical concerns related to actional legitimacy such as the connections between institutional and actional legitimacy and the difficulties of building actional legitimacy (the CDC CGH's day-to-day efforts are useful and responsible) ahead and independent of crises of institutional legitimacy.

Their issues management challenge centered on sharing information about CGH initiatives and persuading audiences of the utility and responsibility of their global health efforts, while maintaining agency reputation. At the same time, to be effective, their messaging needed to circulate (Crook, Stephens, Pastorek, Mackert, & Donovan, 2015). They were particularly interested in how narratives might encourage message sharing interpersonally and on social media platforms, reflecting a larger governmental push to realize the potential of social media for public policy goals (e.g., see 21st-Century statecraft in Clinton, 2011). Social media hold promise and peril for public policy (Klinger & Svensson, 2014) as mediator in the dissemination of information (Stephens & Malone, 2009; Yang et al., 2010) and as sites of more immediate connections between governments and citizens (Hong, 2013). The CGH hoped that narratives might be more likely to be shared. Narrative messages may be more immersive and evocative than non-narrative (Murphy et al., 2013; Zebregs et al., in press), and thus, more likely to encourage sharing (Alhabash & McAlister, 2014; Berger & Milkman, 2012).

To investigate the efficacy of narrative messages for public affairs messaging about global public health, we conducted a multiple-message experimental comparison of narrative and non-narrative messages created to showcase the importance and success of global public health initiatives. The specific outcomes of concern in this study were informed by the practical exigencies of the CGH *and* communication theory and

research, and they included perceptions of the *global public health mission*, *agency reputation*, and *intentions to share information*. A concern for agency reputation (institutional legitimacy) and perceptions of the specific global public health mission (actional legitimacy) reflected relevant theory and the issues management goals of the CGH (i.e., encouraging support for their initiatives without degrading perceptions of the organization) and the practical need to encourage the circulation of their messaging. To conceptualize the differential effects of narrative and non-narrative forms on these outcomes, we turned to transportation theory and the narrative persuasion literature.

Narrative and Transportation Theory

Compared with the literature on narrative persuasion in general, the research evidence comparing the relative effectiveness of narrative and non-narrative has been more equivocal (Moyer-Gusé & Nabi, 2011; Murphy et al., 2013). Early experimental communication research on the relative persuasiveness of anecdotal versus statistical evidence found that although anecdotal evidence was persuasive (i.e., compared with conditions without evidence), statistical evidence was more so; however, more recent studies have found that narrative can be more effective than non-narrative (Zebregs et al., in press). For example, narrative has proven to be better able in specific comparisons to convey the complexity of causes of obesity (Niederdeppe et al., 2011), affect intentions to quit smoking (Kim, Bigman, Leader, Lerman, & Cappella, 2012), encourage empathy toward stigmatized groups (Oliver, Dillard, Bae, & Tamul, 2012), and improve knowledge and change attitudes about medical testing (Murphy et al., 2013). Discovering the contingencies under which narrative outperforms non-narrative remains a principal concern in the study of narrative persuasion (Green, 2008; Niederdeppe et al., 2008). Consistent with findings comparing narrative and non-narrative forms, we hypothesized that narrative messages would have stronger effects than non-narrative messages on perceptions of the legitimacy of the global public health mission (Hypothesis 1a [H1a]) and agency reputation (Hypothesis 1b [H1b]). The relative effects of narratives and non-narratives on intentions to share information have received less attention in narrative persuasion research (Zebregs et al., in press); although they have been found to encourage discussion (Moyer-Gusé, Chung, & Jain, 2011). Per the existing evidence and the experience-base of the CDC CGH, we hypothesized that narratives would be more strongly associated with intentions to share information (Hypothesis 1c [H1c]).

Transportation and Narrative Message Design

Support for these hypotheses would provide evidence for the relative effectiveness of narrative versus non-narrative message design (Harrison, 2014) and speak to the particular exigencies faced by the CGH, but the key to explaining the contingencies under which narratives may outperform non-narratives is in understanding the mechanisms through which narrative messages have effects (Murphy et al., 2013). Scholars have contended that narrative works through multiple mechanisms that might explain why

and when it is especially effective including but not limited to transportation. For example, narratives compared with non-narrative messages may be more enjoyable (e.g., fun, harrowing, or visceral; Green, Brock, & Kaufman, 2004); produce involvement, identification, and parasocial interaction with characters (Moyer-Gusé et al., 2011; Moyer-Gusé & Nabi, 2011); reduce or circumvent negative reactions to persuasion and counterarguing (Niederdeppe et al., 2011); evoke emotional as well as cognitive responses (Appel & Richter, 2010); and encourage a greater belief in the realism of claims or the authenticity of the narrative world through a suspension of disbelief (Weber & Wirth, 2014). Narratives may also be more persuasive when the legitimacy burden is greater (as is the case for global public health) because they mask the persuasive intent (Niederdeppe et al., 2014; Niederdeppe et al., 2011).

Transportation theory conceptualizes narratives as immersive experiences—immersion with sufficiently intense engagement that audiences lose connection with the material world and develop a stronger connection with the narrative world. Transportation theory has received empirical support in comparisons of narrative and non-narrative messages (Murphy et al., 2013), and it provides a useful framework for theorizing why narrative works. According to transportation theory, narratives work because they are vivid, relatable, and transformative experiences that leave audiences feeling more consistent with themes conveyed in the narratives (Green & Brock, 2000). The term *transportation* evokes the metaphor of physical travel to capture how audiences are drawn into stories (Gerrig, 1993). Green and Brock's (2000) germinal work on the persuasive potential of narrative found that readers who were transported returned changed by the experience; that is, their beliefs were more consistent with the story than they were before reading.

In sum, transportation is an effect of messages, and it in turn has effects on the outcomes of interest (Murphy et al., 2013; Tukachinsky & Tokunaga, 2013). With this framing in mind, we hypothesized that narrative messages would be perceived as more transporting (Hypothesis 2 [H2]), *and* that transportation would mediate the effects of message variation (e.g., narrative vs. non-narrative) on support for the CDC's global public health mission, perceptions of agency reputation, and information-sharing intentions (Hypothesis 3 [H3]). Meanwhile, we also sought to explain why a particular message might be more or less transporting.

Perceptions of the Message Narrativity

Research has confirmed that transportation mediates the influence of narrative messages on persuasive outcomes (Murphy et al., 2013; Tukachinsky & Tokunaga, 2013), but that finding is not *always* confirmed even when narrative messages are found to be transporting (Jensen et al., 2013). Research is needed that unpacks why narrative messages are more less transporting.

Examining the mediating role of transportation, the typical approach compares participants' reactions to narrative and non-narrative messages: A participant reads a message and may or may not be transported. Researchers have typically compared a single pair or set of narrative/non-narrative messages (e.g., a narrative vs. a non-narrative

film in Murphy et al., 2013; a personal story, summary of evidence, or hybrid in Niederdeppe et al., 2011; a news style television program, narrative embedded in a teen drama, or an actual episode of the teen drama, in Moyer-Gusé & Nabi, 2011). Kim et al. (2012) included message replications to address the problem of case-category confounding, wherein an experimental finding is confounded with a particular message or messages such that experimental effects cannot disentangle the effects of the manipulation from the particulars of the messaging used in the manipulation (Jackson, 1992). Unpacking why narrative messages have effects on outcomes through transportation may be particularly useful for research comparing narratives and non-narratives, wherein “researchers have noted the difficulty in producing or selecting appropriately engaging narrative and non-narrative messages for comparison within studies” (Murphy et al., 2013, p. 119). Research needs to disentangle particular narratives and the features of narrativity that narrative messages possess to a greater degree. This approach joins transportation theory with a richer theorizing of the messages themselves. Messages features more common to narrative (i.e., a clear beginning, middle, and end and a clear cast of characters) should be more likely to encourage transportation. We expected the narrative messages to be perceived as having a more explicit story structure (Hypothesis 4a [H4a]).

Narratives also encourage the creation of a connection between the reader and the characters (Murphy et al., 2013). That connection may make narratives more personally relatable (Jensen, King, Carcioppolo, & Davis, 2012). Narratives also convey information in ways that may reduce feelings of being overloaded (Jensen et al., 2013). As a form more consistent with the discourse of everyday life, narratives should be more readily understood: “Our lives are told and represented through narratives . . . stories are used every day as a way of making sense of and communicating events in the world” (Avraamidou & Osborne, 2009, p. 1686). We hypothesized that the narrative messages would be being more understandable (Hypothesis 4b [H4b]), more personally relevant (Hypothesis 4c [H4c]), and less information overloading (Hypothesis 4d [H4d]) than non-narrative messages.

The effects of the narrative versus non-narrative comparison should be mediated by perceptions of these messages features. The manipulation of specific message features (e.g., message length) represents a straightforward, manifest message design task (O’Keefe, 2003), but the manipulation of narrative versus non-narrative forms is holistic, requiring the simultaneous manipulation of multiple specific message features at once (e.g., clear cast of characters, story structure, and imagery). Per transportation theory, the mix of these features *together* has effects. Yet, it is possible to understand those holistic effects as operating through different mediating states (O’Keefe, 2003) such as perceptions of messages and transportation that reflect particular message features. Perceptions of message features (e.g., story structure, understandability, personal relevance, and information overload) should mediate the effects of narrative versus non-narrative message manipulations on the outcomes of interest (Hypothesis 5 [H5]).

Furthermore, the effects of these perceptions of messages on the outcomes should also be mediated to some degree by transportation. Messages structured like a story

and perceived as more understandable, more personally relevant, and less information overloading will be more transporting and thus more likely to have effects on perceptions of the global public health mission, perceptions of agency reputation, and information-sharing intentions (Hypothesis 6 [H6]). Given the important mediating role of transportation in previous research (Murphy et al., 2013; Tukachinsky & Tokunaga, 2013), we needed to explore the indirect effects of these message perceptions on the outcomes of interest *and* the degree to which transportation mediated the effects of message perceptions. Whereas H1, H2, and H4 focused on a comparison of holistic message designs (i.e., the second class of claims articulated by O’Keefe, 2003), the mediation analyses in H3, H5, and H6 sought to explain observed differences between the message designs (if any) in terms of the effects through mediating states (i.e., O’Keefe’s third class of claims).

Method

Experimental Design

To test these hypotheses, the study utilized a multiple-message, experimental design (Jackson, 1992). Rather than comparing variations in a single message as is common in message effects research (O’Keefe, 2015), we compared multiple pairs of messages. Multiple messages were created to represent the experimental manipulations. Each participant saw a single message, and the results were analyzed together (Jackson & Brashers, 1994). Patterns in the comparison of narrative and non-narrative message design should have to hold true across all of the message replications. The inclusion of message replications and the analysis of messages as a random factor allow for generalizations across messages parceling out variation due to (a) idiosyncrasies of particular messages and (b) the variables of interest (Jackson & Jacobs, 1983; Jensen, 2008; Kim et al., 2012).

As part of a larger study, we manipulated narrative versus non-narrative and personal relevance. This analysis focuses on the narrative manipulation, but we describe the complete design for clarity. We controlled for the other manipulation in all analyses. Participants ($N = 669$) were randomly assigned to 1 of 32 conditions in a 2 (narrative [four messages] vs. non-narrative [four messages]) \times 2 (personal relevance statement included vs. not) \times 2 (pre- and posttest vs. posttest-only) experimental design. The narrative manipulation included four nested message replications (i.e., four pairs of narrative and non-narrative messages, $2[4] \times 2 \times 2 = 32$).

Procedure

The experiment was conducted entirely online through Qualtrics.com. After recruitment, participants visited a website to complete the informed consent process. Next, participants were randomly assigned to conditions. Approximately half completed a pretest questionnaire ($n = 340$, 50.8%). The pretest questionnaire consisted of only the CDC reputation and global public health mission indexes. Then, all participants were

exposed by the site to a version of the experimental stimuli—a short, narrative, or non-narrative, text-only message about a CDC CGH initiative. After reading the text, the site administered the same posttest to all participants.

Participants

Participants were recruited at a large state university in the southeastern United States through public-speaking classes available to the entire campus. Participants were contacted through the campus's online learning management system, offered extra credit (1% of their course grade). More women (60.3%) participated than men (39.7%), and the mean age was 20.7 years ($SD = 1.89$). Although exact calculations of power across the complexity and diversity of analyses are complicated, we estimated that given the sample size, an $\alpha = .05$, two-tailed tests, and a small effect (Cohen's $f = 0.14$), the achieved power ranged from 0.96 for the analyses using the posttest-only conditions and to 0.99 for analyses combining pre- and posttest data.

Outcome Measures (Dependent Variables)

We used a mix of established and new measures, and all measures met the standards for satisfactory reliability (see Table 1). *Agency reputation* was measured in the pre- and posttest using an existing measure of organizational reputation modified for our purposes (Yang et al., 2010). It included six semantic differential items asking participants to rate the CDC as reputable/disreputable, responsible/irresponsible, stable/unstable, trustworthy/untrustworthy, established/fly-by-night, and long-run oriented/short-run oriented. *Support for the global public health mission* was measured using an index developed for this study that focused on the assessing participants perceptions of the utility and responsibility (Boyd, 2000) of the CDC's policy of involvement in global public health. The four-item, Likert-type index included these items: "The CDC should do public health work overseas," "The CDC should do public health work only in the United States (reversed)," "The CDC should spend American tax dollars to help sick people around the world," and "American tax dollars should be spent to improve global public health." Whereas the agency reputation measure focused on a global perceptions of the CDC (our proxy for institutional legitimacy, Boyd, 2000), support for the global public health mission items concerned policy enacted by the organization (our proxy for actional legitimacy).

For *information-sharing intentions*, we employed measures used in previous research (Crook et al., 2015). Two 3-item indexes focused on information sharing interpersonally and through social media. They were measured only in the posttest. The interpersonal index included three items ("I would be willing to share this information with others," "I would talk with others about this information," and "I would point others in a direction where they could read this information"). The index focused on online information sharing included three items as well ("I would 'like' a Facebook page with this information," "I would be willing to post a link to this information on

Table 1. Descriptive Statistics.

	<i>M</i>	<i>SD</i>	<i>n</i>	α	2	3	4	5	6	7	8	9
1 Intentions to share (I)	3.80	1.17	665	.92	.61	.49	.25	.60	.30	.43	.50	-.31
2 Intentions to share (SM)	3.07	1.36	665	.93		.43	.16	.50	.25	.26	.45	-.16
3 Support for GPHM Δ	0.24	2.01	338	.86			.20	.44	.10, <i>ns</i>	.23	.45	-.12
4 CDC reputation Δ	0.02	1.05	337	.93				.29	.15	.19	.12	-.19
5 Transportation	3.66	0.69	669	.82					.44	.41	.55	-.39
6 Story structure	3.62	1.11	666	.75						.36	.40	-.27
7 Understanding	4.69	0.88	664	.91							.22	-.49
8 Personal relevance	3.07	1.00	667	.83								.05, <i>ns</i>
9 Information overload	2.59	0.87	667	.81								

Note. Index means, standard deviations, number of participants responding, Cronbach’s alpha, and zero-order correlations. All correlations are significant ($p < .05$) except for those in italics. The table reports the outcome variables including (a) interpersonal (I) and (b) SM information-sharing intentions, (c) change (Δ) in support for the GPHM, and (d) CDC reputation—followed by the covariates 5 to 9. SM = social media; GPHM = global public health mission; *ns* = non-significant; CDC = Centers for Disease Control and Prevention.

Facebook,” and “I’d re-tweet a link to this information.” The mission support and information-sharing indexes used 6-point, Likert-type response scales ranging from *strongly disagree* (1) to *strongly agree* (6).

Stimulus Materials (Independent Variable Manipulations)

For stimulus materials, we employed actual messages produced by the CGH that had the sort of narrative design they were convinced would be more effective and non-narrative versions we created with their input. Using their actual messages was essential to the collaboration, because they had a theoretical interest in narrative messaging but also a practical interest in the specific messages under study (Barge & Shockley-Zalabak, 2008). We selected four vignettes that had previously appeared on their website. With input from the communication professionals at the CDC CGH, we then crafted four matched, expository, non-narrative messages. We asked the CDC CGH professionals to evaluate the non-narrative messages for consistency with the typical messaging produced at the CDC. They agreed that we had captured in the revisions the more expository form common at the agency and seen as more appropriate by their internal stakeholders.

Each pair of messages (see the appendix) focused on an effort in which the CDC was an important player. The foci included a counseling program for HIV-positive children in Thailand, anti-malaria efforts in Kenya, an effort against gender-based violence in Rwanda, and the Basic Care Package initiative for HIV treatment in Kenya. The narrative messages about their programs contained a clear cast of characters, vivid imagery, and a clear beginning, middle, and end. The non-narrative messages revised the content to emphasize a factual recounting of the program and its successes without

emphasizing particular characters or story structures. The narrative messages focused on a central individual character; the non-narrative message emphasized institutional actors. The narrative messages included rich descriptive language to help create mental pictures of the story; the non-narrative messages removed the descriptive language. The narrative messages were anecdotal focused on the human experience of the diseases involved; the non-narrative messages used broad, generic claims about the disease. As a result, the narrative messages were slightly longer in each case (range = 310-522 words, $M = 415.75$ words, $SD = 69.97$). The differences among pairings ranged from 71 to 129 words, but analyses including the length of the message as a covariate found that the length of the message had no significant effects. The online system also monitored the length of time participants spent on the page displaying the message, and there were no significant differences in the length of time spent on the page between replications or conditions. Participants typically spent about 2 minutes with the page displaying the experimental stimulus (median = 130 seconds, first quartile = 79 seconds, third quartile = 192 seconds). The multiple-message design was essential for making claims about narrative across messages and for controlling for such variations (Jackson, 1992). By parceling out the message-specific variation, the analysis would focus on the narrative versus non-narrative manipulation not the particular idiosyncrasies of the messages.

Measures of Mediating States

In the posttest, we measured multiple aspects of participants' perceptions of the message per our conception of their perceptions as mediating states reflecting the intermediate effects of messages (O'Keefe, 2003). *Transportation* was measured using the well-established Green and Brock (2000) measure, including the 11 general items and 1 message-specific panel item adapted for this study. The 12-item measure included items such as "While I was reading the article, I could easily picture the events in it taking place," "While I was reading the article, activity going on in the room around me was on my mind," "I could picture myself in the scene of the events described in the article," and "I was mentally involved in the article while reading it." It should be noted that we could only use the items that would had face validity for participants reading the narrative *and* non-narrative messages. Perceptions of *story structure* focused on perceptions of the narrativity of the messages by focusing on theoretically important aspects of narrative (Gerrig, 1993; Green et al., 2004; Green et al., 2002), measured using a 2-item index: "The article contained a storyline with a clear beginning, middle, and end," and "The article had a clear cast of characters." We measured *understanding*, that is, participants' perceptions of how well they understood the message, with a 2-item index: "The story made sense to me" and "I got the story." To measure *personal relevance*, we used a 4-item index that consisted of "I could see how this issue described matters to me," "The article was relevant to me," "The article related to me personally," and "My thoughts about the article focused on me personally." *Information overload* was measured using an established index (Stephens & Rains, 2011), and the 4-item measure included, "It was too much information for me

to process,” “It was more discussion than I wished to have,” “It was more information than I needed to receive,” and “It was about the right amount of information (reversed).” The measures were of Likert-type items with a 6-point response scale, ranging from *strongly disagree* (1) to *strongly agree* (6). We calculated reliability indicators for the narrative and non-narrative conditions separately, and each met established criteria for reliability. We report the reliability indicators for the data as a whole (see Table 1).

Results

H1a to H1c: Narrative Versus Non-Narrative Messages

To compare narrative and non-narrative messages, we conducted mixed-model ANOVA for each outcome variable (Jackson & Brashers, 1994): Personal relevance (explicit vs. implicit) and pre/posttest versus posttest-only were modeled as fixed factors with message replications nested within the narrative versus non-narrative condition as a random factor (see Table 2). We report Cohen’s f as an indicator of effect size (small effect = 0.14, medium = .39, large = .59 per Cohen, 1988). This analysis allowed us to parcel out variability due to the particular idiosyncrasies of the messages used (Jackson, 1992; see also a similar approach in Jensen, 2008). The pretest had no significant effects on the outcomes, and we combined pre- and posttest conditions in the analyses that did not rely on pretest data (i.e., the information-sharing outcomes were only measured in the posttest).

H1a to H1c contended that narrative messages would have a stronger positive effect on perceptions of the global public health mission and on the reputation of the CDC, and that they would encourage stronger intentions to share the message interpersonally and through social media (see Table 2 for means by condition). The narrative messages were no more likely to produce positive change in participants’ support for the global public health mission ($F(6, 328) = 1.17, p = .32$) or CDC reputation ($F(6, 327) = 1.69, p = .16$). On the other hand, these messages did not erode support or reputation either—an important result for those at the CGH concerned that using narrative messaging would have deleterious effects. Participants in the narrative conditions *were* more likely to report that they would share the information interpersonally ($F(6, 651) = 3.68, p < .01, f = 0.18$) and through social media ($F(6, 651) = 3.28, p < .01, f = 0.18$). The results were not consistent with H1a or H1b, but did support H1c.

H2 and H3: Transportation as Mediator of Narrative Message Designs

Consistent with H2, the narrative messages were also perceived as more transporting ($F(6, 658) = 5.90, p < .01, f = 0.23$) than the non-narrative ones. H2 was supported. H3 further posited that transportation would mediate the effects of message variations on changes in support for the global public health mission, changes in perceptions of agency reputation, and information-sharing intentions. To test for mediation, we use procedures detailed by Hayes (2013) and the PROCESS 2.11 macro. Per Hayes’s recommendations, we used the ordinary least squares (OLS) regression approach with bias-corrected

Table 2. Narrative Versus Non-Narrative Message Conditions by Replication, Outcome Variables.

	Narrative	Non-narrative
Intentions to share information, interpersonal	3.86 (1.13)	3.74 (1.21)
Replication Pair 1	3.91 (1.21)	3.69 (1.18)
Replication Pair 2	4.27 (0.98)	3.76 (1.17)
Replication Pair 3	3.44 (1.17)	3.71 (1.30)
Replication Pair 4	3.80 (1.02)	3.79 (1.21)
Intentions to share information, social media	3.10 (1.35)	3.03 (1.37)
Replication Pair 1	2.93 (1.34)	3.07 (1.31)
Replication Pair 2	3.62 (1.32)	3.03 (1.43)
Replication Pair 3	2.79 (1.37)	3.11 (1.44)
Replication Pair 4	3.00 (1.24)	2.92 (1.03)
Support for global public health mission Δ	0.38 (2.08)	0.10 (1.93)
Replication Pair 1	0.17 (1.70)	-0.25 (1.94)
Replication Pair 2	0.57 (1.96)	0.39 (1.77)
Replication Pair 3	0.11 (2.14)	0.45 (1.76)
Replication Pair 4	0.65 (2.48)	-0.19 (1.76)
CDC reputation Δ	0.08 (1.17)	-0.03 (0.92)
Replication Pair 1	0.00 (0.99)	-0.05 (0.98)
Replication Pair 2	0.32 (1.24)	-0.19 (1.13)
Replication Pair 3	-0.26 (1.10)	0.07 (0.68)
Replication Pair 4	0.24 (1.28)	-0.04 (0.92)

Note. Means with standard deviations are given in parentheses. Where applicable (i.e., in all cases but the two change variables), data from the pre- and posttest conditions were combined. The analysis revealed no significant pretest effects. CDC = Centers for Disease Control and Prevention.

bootstrap resampling with 10,000 iterations. We report the bootstrapped coefficients, standard errors, and 95% confidence intervals (CIs), and the R^2 of the combined model of direct and indirect effects as an indicator of explanatory power. We also report unstandardized coefficients in the scale of each measure, per Hayes's recommendations, that reflect differences in the narrative versus the non-narrative conditions accounted for by the mediating variables. Tests for mediation were still appropriate even when there was no direct effect for narrative versus non-narrative, because the presence of a direct effect is not a necessary condition for mediation (Hayes, 2009, 2013).

Although transportation was strongly related to the outcome variables (see Table 1), it did not mediate an indirect effect on changes in support for the global public health mission (coefficient = 0.10, $SE = 0.10$, 95% CI = [-0.07, 0.31], $R^2 = .19$) or agency reputation (coefficient = 0.03, $SE = 0.03$, 95% CI = [-0.02, 0.11], $R^2 = .09$), inconsistent with H3. However, consistent with H3, transportation did mediate an indirect effect of the

Table 3. Narrative Versus Non-Narrative Message Conditions by Replication, Covariates.

	Narrative	Non-narrative
Transportation	3.73 (0.66)	3.59 (0.72)
Replication Pair 1	3.78 (0.61)	3.66 (0.64)
Replication Pair 2	3.96 (0.59)	3.57 (0.68)
Replication Pair 3	3.37 (0.66)	3.60 (0.86)
Replication Pair 4	3.80 (0.65)	3.54 (0.67)
Story structure	3.96 (1.12)	3.29 (1.11)
Replication Pair 1	3.84 (1.02)	3.46 (1.04)
Replication Pair 2	4.00 (1.04)	3.21 (1.07)
Replication Pair 3	3.63 (0.92)	3.33 (1.21)
Replication Pair 4	4.40 (0.99)	3.14 (0.97)
Understanding	4.83 (0.87)	4.58 (0.88)
Replication Pair 1	4.83 (0.79)	4.64 (0.84)
Replication Pair 2	5.01 (0.71)	4.61 (0.91)
Replication Pair 3	4.57 (0.84)	4.44 (1.05)
Replication Pair 4	4.82 (0.81)	4.62 (0.94)
Personal relevance	3.12 (0.95)	2.98 (1.04)
Replication Pair 1	2.87 (0.99)	2.90 (0.95)
Replication Pair 2	3.34 (0.83)	3.04 (1.02)
Replication Pair 3	3.08 (0.96)	3.01 (1.17)
Replication Pair 4	3.13 (0.96)	2.97 (1.02)
Information overload	2.50 (0.91)	2.67 (0.88)
Replication Pair 1	2.26 (0.67)	2.59 (0.78)
Replication Pair 2	2.50 (0.85)	2.73 (0.93)
Replication Pair 3	2.84 (0.81)	2.77 (1.02)
Replication Pair 4	2.43 (0.92)	2.56 (0.78)

Note. Means with standard deviations are given in parentheses. Where applicable (i.e., in all cases but the two change variables), data from the pre- and posttest conditions were combined. The analysis revealed no significant pretest effects.

narrative message variations on intentions to share interpersonally (coefficient = 0.14, $SE = 0.06$, 95% CI = [0.04, 0.26], $R^2 = .35$) and through social media (coefficient = 0.14, $SE = 0.09$, 95% CI = [0.04, 0.26], $R^2 = .25$). H3 received partial support.

H4a to H4d: Narrative Versus Non-Narrative Messages Features

Based on our explication of narrative message design, we conceived of multiple variables as mediating states (see Table 3), defining the narrative manipulation according to message features (O'Keefe, 2003). H4a to H4d posited that narrative messages would be perceived as having a story structure (H4a), being more understandable (H4b), and more personally relevant (H4c), and as involving less information overload (H4d) than non-narrative messages. Again, we tested each using mixed-model ANOVA. The narrative

messages were perceived as having more of a story structure ($F(6, 652) = 4.63, p < .01, f = 0.20$), being more understandable ($F(6, 650) = 2.29, p = .03, f = 0.14$), and as involving less information overloading ($F(6, 653) = 3.88, p < .01, f = 0.18$), than the non-narrative messages, providing support for H4a, H4b, and H4d. But, there was no significant effect on perceptions of personal relevance, inconsistent with H4c.

H5 and H6: Perceptions of Message Features as Mediating States

H5 posited that perceptions of the message should mediate the effects of narrative versus non-narrative message on the outcomes of interest. H6 posited narrative message design would also have an indirect effect on the outcomes serially through perceptions of the messages and then transportation. In other words, messages perceived as more understandable, more personally relevant, structured like a story, and less information overloading would have stronger effects on the outcomes of interest and would be more transporting and thus more likely to have persuasive effects (see summary of mediation results in Table 4).

To test for serial mediation, again using procedures outlined by Hayes (2013), we implemented in the tests of serial mediation in Mplus 7.2 to allow for the simultaneous modeling of five mediating variables as well as discretely using the PROCESS 2.11 macro, which limits analyses to four mediators. Allowing for minor variations in the specific estimates of coefficients, standard errors, and CIs, the results were the same (magnitude and direction). We report the discrete models to focus attention on performance of the measures of perceptions of messages (Table 4). For each dependent variable, the modeling included the following effects: the direct effect of the narrative message variations on the outcome and the indirect effects (a) through the perception of the message feature, (b) through transportation, and (c) in serial through the perception of the message feature and then through transportation.

Across the models, a pattern generally consistent with H6 emerged; however, H5 received support in only a few cases (Table 4). That is, the effects of the narrative manipulation tended to be mediated serially through perceptions of message features *and* transportation. Consistent with H6, the narrative message variation had a significant indirect effect on *changes in support for the global public health mission* through story structure and transportation (coefficient = 0.20, $SE = 0.06$, 95% CI = [0.12, 0.35], $R^2 = .20$), understanding and transportation (coefficient = 0.10, $SE = 0.04$, 95% CI = [0.03, 0.20], $R^2 = .19$), and personal relevance and transportation (coefficient = 0.06, $SE = 0.04$, 95% CI = [0.01, 0.15], $R^2 = .26$). Consistent with H5, personal relevance was also a mediator apart from transportation (coefficient = 0.12, $SE = 0.07$, 95% CI = [0.01, 0.29], $R^2 = .26$). However, story structure and understanding were not (inconsistent with H5). Information overload played no mediating role in the relationship between the narrative message variations and changes in support for the global public health mission (inconsistent with H5 and H6).

Consistent with H6, the narrative message variation had a significant indirect effect on *changes in CDC reputation* through story structure and transportation (coefficient = 0.07, $SE = 0.02$, 95% CI = [0.03, 0.12], $R^2 = .09$); understanding and transportation

Table 4. Summary of Mediation Analyses.

		Intentions to share		Support for GPH mission	CDC reputation
		I	SM	Δ	Δ
Hypothesis 5					
N	$SS \rightarrow Y$	—	—	—	—
N	$U \rightarrow Y$	0.07 (0.02)	0.03 (0.02)	—	—
N	$PR \rightarrow Y$	—	—	0.12 (0.07)	—
N	$IO \rightarrow Y$	0.02 (0.01)	—	—	—
Hypothesis 6					
N	$SS \rightarrow T \rightarrow Y$	0.19 (0.03)	0.18 (0.03)	0.20 (0.06)	0.07 (0.02)
N	$U \rightarrow T \rightarrow Y$	0.06 (0.02)	0.07 (0.02)	0.10 (0.04)	0.03 (0.02)
N	$PR \rightarrow T \rightarrow Y$	—	—	0.06 (0.04)	0.04 (0.02)
N	$IO \rightarrow T \rightarrow Y$	0.04 (0.02)	0.05 (0.02)	—	—

Note. Coefficients of indirect effects with standard errors are given in parenthesis. The unstandardized coefficients reflect changes expected in the scale of the outcome variables. They reflect the differences in the narrative versus the non-narrative conditions accounted for by the mediating variables. CDC = Centers for Disease Control and Prevention; GPH = global public health; N = narrative versus non-narrative manipulation; SS = story structure; U = understanding; PR = personal relevance; IO = information overload; T = transportation.

(coefficient = 0.03, $SE = 0.02$, 95% CI = [0.01, 0.07], $R^2 = .09$), and personal relevance and transportation (coefficient = 0.04, $SE = 0.02$, 95% CI = [0.01, 0.09], $R^2 = .09$). None of these variables played a mediating role apart from transportation (inconsistent with H5). Information overload played no mediating role in the relationship between the narrative message variations and changes in CDC reputation (inconsistent with H6).

The narrative message variation and a significant indirect effect on *intention to share interpersonally* through story structure and transportation (coefficient = 0.19, $SE = 0.03$, 95% CI = [0.12, 0.25], $R^2 = .36$), understanding and transportation (coefficient = 0.06, $SE = 0.02$, 95% CI = [0.03, 0.10], $R^2 = .40$), and information load and transportation (coefficient = 0.04, $SE = 0.02$, 95% CI = [0.01, 0.09], $R^2 = .36$).

Understanding (coefficient = 0.07, $SE = 0.02$, 95% CI = [0.03, 0.12], $R^2 = .40$) and information overload (coefficient = 0.02, $SE = 0.01$, 95% CI = [0.01, 0.05], $R^2 = .36$) were mediators apart from transportation (consistent with H5), but story structure was not (inconsistent with H5). Personal relevance played no mediating role between the narrative message variations and intention to share interpersonally (inconsistent with H5 and H6).

Consistent with H6, the narrative message variation had a significant indirect effect on *intention to share through social media* through story structure and transportation (coefficient = 0.18, $SE = 0.03$, 95% CI = [0.12, 0.25], $R^2 = .26$), understanding and transportation (coefficient = 0.07, $SE = 0.02$, 95% CI = [0.03, 0.12], $R^2 = .26$), and information load and transportation (coefficient = 0.05, $SE = 0.02$, 95% CI = [0.01, 0.10], $R^2 = .26$). Consistent with H5, understanding was also a mediator apart from transportation (coefficient = 0.03, $SE = 0.02$, 95% CI = [0.01, 0.06], $R^2 = .26$), but (inconsistent with H5) story structure and information were not. Personal relevance played no mediating role between narrative message variations and intention to share through social media (inconsistent with H5 and H6). We turn now to a discussion of the implications of these results for comparisons of narrative and non-narrative messages, the contribution of a message features approach to narrative persuasion research, and message design to address issues management encompassing actional legitimacy.

Discussion

Consistent with past research, in this study, the comparisons of narrative messages versus non-narrative messages were mixed, but the mediation analysis allowed us to clarify those comparisons. The findings also extended narrative persuasion research to include outcomes important to issues management, which receive less attention compared with more general story-consistent beliefs or intentions (Niederdeppe et al., 2008; Zebregs et al., in press). Participants in the narrative conditions were not more likely to change their perceptions of the global public health mission or CDC reputation. Whereas CDC reputation was already high ($M_{\text{postreputation}} = 5.38$, $SD = 1.09$), support for the global public health mission was not ($M_{\text{postsupport}} = 3.78$, $SD = 1.09$). However, participants *did* report stronger intentions to share narrative than non-narrative messages ($f_{\text{interpersonal}}^2 = 0.18$, $f_{\text{socialmedia}}^2 = 0.18$, small/medium effects).

Instead of only comparing narrative and non-narrative messages, the effects of narrative message design on perceptions of the agency reputation and support for the global health mission may be better understood as indirect, mediated through perceptions of the messages and transportation. The findings build on narrative persuasion research by confirming the mediating role of transportation *and* by indicating how particular perceptions of message features bear on transportation and the outcomes of interest. Although not consistent for every outcome variable, introducing mediating states that reflected perceptions of messages to the models revealed a consistent pattern (see Table 4): Narrative message variations affected the outcomes of interest to the extent that the messages were perceived as having a story structure, being understandable, being personally relevant, not overloading, *and* thus more transporting.

The findings underscore the importance of transportation in crafting of messages about global public health initiatives. Whereas the narrative versus non-narrative manipulation tended to have small effects, transportation had strong relationships with the outcomes. Whereas the indirect effects of the narrative manipulation tended to be small in the mediation models (H5 and H6), the overall explanatory power of the mediation models was high (as indicated by the R^2 s). (The R^2 s in the models of changes in of agency reputation were lower, but agency reputation was already high constraining the possible increase). Participants who reported being transported were more likely to change their perceptions of agency reputation in a positive way ($r = .29$), more likely to express increased support for the global public health mission ($r = .44$), and more likely to report intentions to share the message interpersonally ($r = .60$) and via social media ($r = .50$). Transportation also mediated the effects of most perceptions of the messages on all the outcomes of interest (per H6), and although the effects of the narrative manipulation on CDC reputation and beliefs about the global public health mission were weak, the narrative messages were on the whole more transporting ($f = 0.23$, small/medium effect).

This contribution is important to the study of narrative persuasion and transportation theory because it suggests that inconsistencies in the effects of narrative message manipulations and perceptions of transportation (Jensen et al., 2012; Jensen et al., 2013; Murphy et al., 2013) may be due to differing effects of perceptions of message features. That is, simple comparisons of particular narrative and non-narrative messages may obscure effects because the non-narrative messages may be effective for some individuals or in some cases (e.g., even the non-narrative messages were transporting for some). That is, there may be no such thing as narrative messages and non-narrative messages, but rather, particular messages possess the characteristics of narrative to a greater degree than others. Faced with this problem and given the strong effects of transportation on the outcomes of interest, it may be tempting to define effective narrative in terms of transportation effects (i.e., good narrative messages are those that are transporting). However, that approach would offer little concrete advice for the creation of actual messages (i.e., “craft messages that are transporting” is accurate but not very helpful, O’Keefe, 2003), and the results suggest an alternative approach.

We conceived of narrative message design as involving the holistic manipulation of clusters of message features. We should expect narratives compared with non-narrative to include particular features (O’Keefe, 2003, 2015), but we should also expect those features to vary in their intensity and character among messages. For example, participants’ reactions to one pair of messages (Replication Pair 3) were the opposite of what we expected, and the contrasts between pairs of were not always as strong as expected (see Tables 2 and 3, and the appendix). Such inconsistencies in the narrative versus non-narrative messages provide a warrant for the atomistic comparison of specific intrinsic message features (i.e., experimental manipulation of particular, intrinsic message features for class 2 claims per O’Keefe, 2003). However, because messages vary in infinite ways that may interact in infinite ways (Jackson, 1992), this atomistic research approach represents dizzying complexity that is somewhat inconsistent with

how communication professionals actually make messages. Communication professionals craft messages holistically (Aakhus, 2007; Harrison, 2014). The creative writing process involves the simultaneous consideration of many message features guided by experience, personal judgment, organizational constraints on messaging, and evidence from practice and research. At the same time, effective narrative encompasses more than solely the balance of anecdotal and statistical evidence or the presence or absence of imagery. Combining holistic and atomistic approaches to the study of message features allows for researchers to come at the problem from multiple angles, and these findings do offer specific, practical insights for issues management. Against this backdrop, the findings make contributions to theory and practice of transportation and narrative messaging by providing evidence about (a) comparisons of narrative versus non-narrative messages, (b) the implications of perceptions of message features for issues management in global public health, and (c) a holistic approach to the study of message features.

Concrete Advice for Narrative Message Design

Narrative messages were more transporting ($f = 0.23$, small/medium effect). Narrative messages were also perceived as having more of a story structure ($f = 0.20$, small/medium effect), being easily understood ($f = 0.14$, small effect), and being less information overloading ($f = 0.18$, small/medium effect). They were more likely to encourage an intention to share the messages ($f_{\text{interpersonal}} = 0.18$, $f_{\text{socialmedia}} = 0.18$, small/medium effects).

In this study, the holistic design of narrative messages emphasized a clear cast of characters, vivid imagery, and a clear beginning, middle, and end, guided by the input of the CGH communication professionals. To create the non-narrative messages, we revised the narrative messages to emphasize institutional actors instead of individuals. The narrative messages had descriptive language to help create mental pictures; the non-narrative messages did not. The narrative messages were anecdotal focused on human experience; the non-narrative messages made broad, generic claims about public health issues.

The weaker performance of the narrative message in Replication Pair 3 is telling. Although the message is focused on a social issue instead of an infectious disease, message design may have played more of a role than the content. After all, the non-narrative version about the same subject was relatively more effective. Yet in the narrative version of the message, the central actors are individuals but still agents of the CDC (cf. the contrast between first- and third-person narratives in Nan, Dahlstrom, Richards, & Rangarajan, in press). There is less descriptive language, and the narrative arc captures the organizational discovery of a strategy to addressing the particular problem not the same sort of individual, human struggle. Not surprisingly, the narrative version of this message was not as transporting as the non-narrative one even though it was perceived as having more of a story structure. The findings confirm that message designers holistically crafting effective narrative should emphasize a clear cast of characters, vivid imagery, and a clear beginning, middle, and end; and they may

do well to focus on the individual experience even though the goal is organizational issues management. In the following sections, we elaborate on the implications of the findings for issues management.

Implications for Global Public Health Issues Management

Narratives were more likely to be shared. Mediation aside, participants reading the narrative messages tended to report higher intentions to share the message interpersonally and via social media. This stronger effect on a behavioral intention (intentions to share the message) is consistent with Zebregs et al.'s (in press) recent meta-analysis that found narrative messages were more likely to affect intentions than attitudes or beliefs. Contrasting narrative and statistical evidence, they argued that the stronger empirical relationship with intentions occurred because individuals tend to have more visceral, affective responses to narratives compared with statistical evidence. Berger and Milkman (2012) found emotionally evocative content more likely to be shared even controlling for evaluations of content as surprising, interesting, or practically useful. These data suggest that narrative message design encourages information sharing in part because the narrative messages were perceived as having a story structure and being more understandable and less information overloading, and more transporting. The stronger effects on the intention to share information may be explained by the immersion in the stories, which may have allowed for a visceral experience of the narrative worlds.

At the same time, we did not discover deleterious effects of narrative message design on perceptions of the global public health mission or agency reputation despite the ample power in the design to do so. These findings should begin to allay CGH concerns that using narrative messages would detract from agency reputation. They should also encourage the use of narrative to the extent that message designers hope to encourage the sharing of messages, but of course, issues management involves more than a concern for the circulation of messages. In as much as practitioners wanted their messaging to “go viral,” they also wanted them to help them establish actional legitimacy.

Taking mediation into account, the narrative messages were able to encourage positive shifts in support for the global public health mission and agency reputation. Encouraging message sharing is important, but establishing actionable legitimacy is about generating support for not just awareness of organizational policies, and it involves more than the broad concern for reputation common to issues management research (Boyd, 2000). In this case, the CGH practitioners were interested in not only enhancing (or at least not harming) agency reputation but also in generating support for the particular policies of dedicating CDC resources to the protection of global public health. In these respects, narrative messages outperformed non-narrative messages but indirectly.

Furthermore, although it was not the focus of our analysis, a simple reading of the zero-order correlations also makes clear that the outcomes variables are themselves related: Post hoc analyses for the CGH staff revealed that gains in the support for the

global public health mission were positively related to information-sharing intentions even controlling for the other variables. It is reasonable that perceptions of the legitimacy of the organizations efforts would play into how the messages would be framed if shared (i.e., sharing could include an admonishment to check out this great/terrible CDC effect). In our results, effects on the support for the global public health mission depended on perceptions of the messages (story structure, understanding, and personal relevance), and the performance of the particular mediating variables provides guidance for future narrative persuasion research and CGH message strategy.

For the most part, the indirect effects of perceptions of message features were mediated through transportation (see Table 4). *Story structure* (e.g., a clear cast of characters; a clear beginning, middle, and end) was a consistent mediator through transportation, and narrative messages were more likely to be perceived as having story structure ($f = 0.20$, small/medium effect). Whereas the other measures of perceptions of the messages reflected mediating effects (i.e., a reaction to the message), story structure is a measure of perceptions of specific message features (i.e., an evaluation of properties of the message). Advice to make messages more understandable, less information overloading, and more personally relevant might apply just as well in non-narrative messaging. Story structure is a particular property of narrative (Fisher, 1984; Gerrig, 1993; Green & Brock, 2000).

Nonetheless, these narrative messages were more easily understood ($f = 0.14$, small effect). *Understanding* was also a consistent mediator through transportation across the outcome variables. Messages that were understandable also tended to be more transporting. Understanding also had mediating effects separate from transportation on intention to share (see Table 4). Participants were also more likely to report intentions to share narrative messages to the extent that they also reported understanding the narratives. Although understanding represents a message effect and a perception of the message not a particular message feature, the finding indicates the need for message designers to take care in the complexity of the messages they create.

Likewise, these narrative messages were evaluated as less information overloading than the non-narrative messages ($f = 0.18$, small/medium effect). *Information overload* mediated the narrative message manipulation, but only for the intention to share outcomes. Participants overloaded by the messages they read found them less transporting and were less likely to report an intention to share them. Information overload also had a mediating effect separate from transportation but only for interpersonal information sharing.

Perceptions of *personal relevance* mediated the effects of narrative messages on shifts in support for the global public health mission and CDC reputation. However, these narrative messages were not perceived as inherently more or less personally relevant. Personal relevance mediated the effects of narrative manipulations on changes in the support for the public health mission apart from and on top of the effect through transportation. The findings indicate the importance of personal relevance in particular for issues management where the principal concern is generating support for particular organizational policy. Personal relevance mattered for perceptions of actional legitimacy, but these data suggest that the narrative form is not in and of itself more resonant.

Although no one study can explore all the complexities of how messaging may play out in public policy contexts, the data indicate the potential efficacy of narrative messaging for their use in issues management around global public health initiatives. In these data, narrative messages were more likely to be shared, and especially so to the extent they were less information overloading and more understandable. Meanwhile, across these results, story structure, understanding, and personal relevance were particularly important for the agency- and mission-focused outcomes. In a practical sense, narratives about organizational initiatives may allow organizations to show and spread the word that their actions and policies practices can and should be deemed legitimate (Boyd, 2000).

Generating Useful Evidence About Messages

Taking these results as a whole, they also provide insights about the utility and limits of our design for generating evidence about message effects (O’Keefe, 2015). The experimental design allowed for claims about the differential effects of the holistic narrative versus non-narrative message manipulation, but we cannot disentangle the effects of specific message properties. Furthermore, the CGH professionals *already* had a good idea about how to create narratives, and the advice to make narratives with a clear cast of characters, vivid imagery, and a clear beginning, middle, and end was not groundbreaking for them. However, these findings did contribute evidence regarding the relative effectiveness of narrative versus non-narrative message design needed to make the case for narrative in policy contexts, and it offered evidence for why the narrative and non-narrative messages had differing effects.

To the extent that research seeks to create an evidence base for message design, the results make clear that the potential effects of narrative are complex. The multiple-message experimental design (Jackson, 1992) proved particularly useful. The design allowed for generalizing across holistically created messages (O’Keefe, 2015). The uneven performance of the message replications made the utility of the design even clearer. Post hoc analyses removing Replication Pair 3 yielded the same pattern of results, because the mixed-model analysis approach controlled for the idiosyncrasies of particular messages to allow for claims about a class of messages.

This methodological and analytical approach proved particularly useful for the CGH too. In practice, typical message testing relies on straightforward message A versus B tests. Incorporating tests of multiple messages and, when possible, relevant covariates gave the CGH an approach for generating more robust insights about how and why their holistic message manipulations worked or not. The focus on message perceptions and transportation provided information about not just the relative performance of messages but also explanations of why messages performed well compared with others. The findings could thus inform choices about particular messages and message strategies.

Limitations

Despite the strengths of the design, the study is not without important limitations. First, among these is the generalizability of the sample. The results related to personal

relevance made clear that audiences and messages interact in important ways. These findings are therefore more useful as a test of theory related to narrative message design than as message testing for the CGH's professionals' target audience—the general public. Second, the pattern of results is clear and reliable, but the magnitude of the effects of the message manipulations tended to be small to medium ($f^2 = 0.14-0.23$). We interpret this as reflecting the importance of form *and* substance. That is, the analysis focused on the effects of message form (narrative vs. non-narrative) but not content. Indeed, the design was meant to control for content, but the actual initiatives included no doubt had effects on participants' perceptions. In the context of policy and issues management, messaging can help make the best possible case for an initiative, but policy judgments should fundamentally be about substance. Third, although we argued for the importance of holistic and atomistic message testing, the evidence for concrete message design from the comparison of narrative versus non-narrative messages in this study is limited. The comparison provided evidence for the usefulness of narrative but not about the particular features of narratives that make one more understandable, relatable, transporting, or persuasive than another. For example, the mediation made clear the importance of transportation, and although the narrative messages were more transporting, further research is needed that manipulates specific message features (O'Keefe, 2015). Despite these shortcomings, the results offer useful insights for narrative persuasion research, transportation theory, and issues management in the context of global public health.

Conclusion

Along with the contributions to theory and practice, the study also adds to our understanding of engaged scholarship (Barge & Shockley-Zalabak, 2008). It provides an exemplar of how engaged scholarship can serve the interests of theory and practice. The study design and analysis were guided by the interests of practice and theory embodied in our collaborative development (Dempsey & Barge, 2014) of the goals of the study (i.e., testing the efficacy of narrative messaging for issues management), study design (i.e., the outcome variables and message manipulations), and analysis of the results (i.e., through meetings and presentations at the CDC). It demonstrates the need for infrastructure (such as the Aspen Conference) that encourages scholar-practitioner collaboration. The CGH provided a warrant for the study grounded in the exigencies of practice, realistic message manipulations informed by their expertise and experience, and an audience that could judge the practical value of the insights.

In the end, the engaged nature of the study meant that the findings would more likely (and more quickly) make concrete contributions to the design of messages in practice, helping the CGH tell the stories of their work. After presenting the results at the following year's Aspen Conference on Engaged Scholarship in 2012, they invited us to share the results at CDC headquarters in Atlanta, GA. We presented to CGH communication specialists and via conference CGH communication staff stationed in offices in over 40 countries, the CDC Director of Communication, the leadership of the private-sector facing CDC Foundation, and a network of communication

specialists throughout the agency. They saw the study as the start of an evidence base that could serve as a foundation for their efforts using narrative that would be credible with internal stakeholders at the CDC. They were confident that the engagement would increase the effectiveness of their efforts to raise awareness of the value of global health work. Although this study reflects only one of many forms of engaged scholarship (Dempsey & Barge, 2014), it demonstrates the usefulness of orienting communication scholarship through collaboration with practitioners to speed the translation of practice into theory and theory into practice. Such engagement can make concrete the contributions of communication scholarship to important problems including making the case for the importance of global public health and the usefulness and responsibility of global public health initiatives.

Appendix

Narrative and Non-Narrative Message Replications

Non-Narrative Replication I

Counseling Program for HIV-Positive Children

The U.S. CDC has worked with staff from Siriraj Hospital, the Queen Sirikit National Institute of Child Health, and the Thailand MOH to create a new four-step procedure to identify, assess, disclose, and monitor and evaluate Thai children infected with HIV. Currently, there are approximately 13,000 Thai children infected with HIV, but many are not told their HIV status. Some studies have found that fewer than half of HIV-infected children over 9 years old in Thailand were informed about their status. Keeping children's HIV status a secret from them may put them at great risk. Children whose status is disclosed to them after puberty may have already engaged in risky behaviors. If they guess correctly about the reasons for their medicines and doctor visits, without being formally told, some children may wonder what other secrets are being withheld from them. Several studies have found that HIV disclosure helps improve children's self-esteem and helps them develop closer relationships with their family members. Disclosing HIV status to infected children involves more than just telling children their diagnosis. The new pediatric disclosure model created by CDC and its Thai partners employs counseling techniques that aim to build relationships and feelings of trust between health care providers, HIV-infected children, and their caretakers. The technique helps caretakers disclose the children's HIV status in a supportive way, through a process that emphasizes educating children about their diagnosis, facilitating

Narrative Replication I

A New Model of Care for Children

In a small, brightly colored room, a young boy sits at a table, drawing a picture. A woman sits nearby, pointing out shapes in the drawing and asking the child questions. The situation would be familiar at nearly any day care facility around the world. But in many hospitals in Thailand, the scene also now includes a new model of pediatric HIV counseling. During the past hour, Yuitiang Durier, a counseling psychologist at Bangkok's Siriraj Hospital, has disclosed to the boy his HIV status, and provided counseling to both the child and his caregiver. CDC worked with staff from Siriraj Hospital, the Queen Sirikit National Institute of Child Health, and the Thailand MOH to create the new four-step procedure to identify, assess, disclose, and monitor and evaluate Thai children infected with HIV. Currently, there are approximately 13,000 Thai children infected with HIV, but many are not told their HIV status. Some studies have found that fewer than half of HIV-infected children over 9 years old in Thailand were informed about their status. "Recently, a mother who was hesitating to tell her daughter the secret said to us, 'I just don't want the cycle to repeat again.' Feelings of guilt over transmitting the virus to her daughter, worries over daughter's emerging sexuality, confusion about her daughter's reluctance to take her meds—these things were just paralyzing for her," explains Kanyarat Klumthanom, a CDC staffer in Thailand who helped create the counseling model. But keeping children's HIV status a secret from them may put them at great risk. Children whose status is disclosed to them after puberty may have already engaged in risky behaviors. If they guess correctly about the reasons for

(continued)

Appendix (continued)

communication between the caretaker and the children, and assessing and managing the impact of the disclosure.

Thus, this new pediatric counseling method allows for physical, emotional, and social factors to be taken into consideration during the disclosure process.

Many other countries have requested assistance with the pediatric counseling approach, and this approach has been shared at WHO meetings in Geneva to develop pediatric HIV disclosure guidelines.

The CDC has worked closely with the Thailand Ministry of Public Health for more than 30 years, strengthening capacity to prevent and control diseases, and reducing health risk behaviors. CDC's work in Thailand and the Southeast Asia region focuses on HIV/AIDS, tuberculosis, and emerging infectious diseases. The office is also responsible for overseeing the health screening for U.S.-bound immigrants and refugees. Together with many partners, it supports programs that strengthen local skills and public health systems in areas like epidemiology, laboratory, and management science.

their medicines and doctor visits, without being formally told, some children may wonder what other secrets are being withheld from them. Several studies have found that HIV disclosure helps improve children's self-esteem and helps them develop closer relationships with their family members. Says Durier, "What most children really want is the truth—good or bad."

Disclosing HIV status to infected children involves more than just telling children their diagnosis. The new pediatric disclosure model created by CDC and its Thai partners employs counseling techniques that aim to build relationships and feelings of trust between health care providers, HIV-infected children, and their caretakers. The technique helps caretakers disclose the children's HIV status in a supportive way, through a process that emphasizes educating children about their diagnosis, facilitating communication between the caretaker and the children, and assessing and managing the impact of the disclosure.

"As these children grow up, they need to learn how to maintain their health, but they aren't able to do this well unless they learn about the status of their illness and the appropriate method of treatment and care," says Klumthanom. "This new counseling method allows for many factors to be taken into consideration during the disclosure process, and let children know their status when they are ready, which helps them physically, emotionally, and socially."

Non-Narrative Replication 2

Domino Effect

The mosquito kills more people than any other creature in the entire world. Although malaria was eliminated in the United States in the late 1940s, approximately half of the world's population is still at risk. Eighty-five percent of the world's malaria deaths occur in Africa, where a child dies from malaria every 45 seconds.

CDC's Malaria Branch, a part of its Global Health Initiative, is acutely aware of the enormous challenges it needs to overcome in the fight against malaria in western Kenya: Hospital wards filled with dying children, few trained health care workers, and even fewer resources. Moreover, existing treatments are not useful because of the emergence of drug-resistant malaria, which has claimed hundreds of lives across Africa.

In the 1980s, there were few resources for combating malaria. But today, thanks to the CDC's global health programs such as the EIS, there are a number of malaria control and prevention programs. The use of treated bed nets, which can dramatically reduce exposure to malaria carrying mosquitoes, has been particularly effective in driving down the number of new cases. This snowball effect is helping

Narrative Replication 2

The Snowball Effect—Battling Malaria on a Global Stage

In a district hospital in western Kenya, more than 200 mothers and children crowd into a small room, hoping to be seen by the hospital's one outpatient health care worker. Inside the hospital is an even bleaker scene. Two, three, or even four seriously ill children lie piled on a single hospital bed. When the nurses prick their small arms to give them transfusions or medicine, their blood is pale pink instead of a healthy red, destroyed by the malaria parasites that have feasted on their tiny bodies.

These are images that Dr. Laurence Slutsker, the associate director for science in CDC's Center for Global Health, knows well. They have been burned into his memory for more than two decades—and are one of the many reasons he has dedicated his life to fighting malaria on a global scale.

The mosquito kills more people than any other creature in the entire world. Although malaria was eliminated in the United States in the late 1940s, approximately half of the world's population is still at risk. Eighty-five percent of the world's malaria deaths occur in Africa, where a child dies from malaria every 45 seconds.

When Dr. Slutsker started working on the prevention and control of malaria in the 1980s as an EIS officer at CDC, he was new not only to working with the disease but

(continued)

Appendix (continued)

researchers and health professionals limit the impact of malaria in areas where cases can be contained, and begin to control it like an outbreak of any infectious disease. Treatments such as these have helped decrease deaths from malaria by more than 10% from 2008 to 2009.

Although there has been significant progress in the fight against malaria, continued investment in malaria treatment and research is essential if malaria is to be eradicated someday.

CDC-Kenya is part of the PMI and works with KEMRI, the MOH, and other partners to conduct research and develop evidence-based policy and programs that reduce the burden of malaria in Kenya.

Research focuses on vaccine efficacy, preventing malaria in pregnancy, reducing transmission, and measuring the percentage of people who have malaria. Studies strengthen the country's capacity to do research and provide a structure that will be in place long after the trials have ended. Research is supported by the KEMRI/CDC malaria laboratory, which also provides technical support to district hospitals.

The EIS is a unique 2-year post-graduate training program of service and on-the-job learning for health professionals interested in the practice of applied epidemiology. Since 1951, over 3,000 EIS officers have responded to requests for epidemiologic assistance within the United States and throughout the world. EIS officers are on the public health frontlines, conducting epidemiologic investigations, research, and public health surveillance both nationally and internationally.

also to global health work as well. "I was a complete novice," he says. But as he started talking to staff in CDC's Malaria Branch, he became fascinated. "EIS is sort of an adventure," says Dr. Slutsker, who was quickly dispatched to western Kenya to investigate a mysterious epidemic of severe anemia. It was there that he encountered devastating hospital wards with dying children, few trained health care workers, and even fewer resources.

"People were relying on treatment, but the treatments weren't working because of increasing resistance of the parasite to malaria drugs," explains Dr. Slutsker, who worked to trace the anemia to its root cause, malaria. "That's a problem that unfolded across the African continent. Hundreds of thousands of people across Africa lost their lives." "I was overwhelmed," he admits, "but I understood that this was a place where you could make a huge difference."

While there were few resources for combating malaria when Dr. Slutsker originally visited Kenya, today there are a number of malaria control and prevention programs. "The use of treated bed nets, which can dramatically reduce exposure to malaria carrying mosquitoes, has been particularly effective in driving down the number of new cases," explains Dr. Slutsker.

"This snowball effect is helping researchers and health professionals limit the impact of malaria in areas where cases can be contained, and begin to control it like an outbreak of any infectious disease." Treatments such as these have helped decrease deaths from malaria by more than 10% from 2008 to 2009.

But while there has been significant progress in the fight against malaria, there is still a need to do more. "I really do think we will eradicate malaria someday," says Dr. Slutsker, who will always remember the children he saw on his first trip to Kenya. "It's not going to melt away all at once. I think we will get there, but we have to invest in programs and in developing new tools."

Non-Narrative Replication 3

Collaborating to Make a Difference

Rwanda has a serious problem with gender-based violence. According to the OGAC's latest gender-based violence report on Rwanda, 50% of all gender-based violence cases in Rwanda involve children under the age of 17. Rape is under-reported, and it is important to get those who have been raped to a clinic, so that they can receive appropriate treatment. In addition, teachers, who have the greatest contact with the target population, need to be educated in identifying the signs of gender-based violence, abuse, and neglect among children.

To combat gender-based violence, Rwanda's Global Health Initiative Strategy developed an innovative partnership with the Peace Corps, a dedicated team, which established ties to the local community.

Narrative Replication 3

Using U.S. Strength to Make a Difference in the Lives of Children

When Zara Ahmed and her U.S. Government CDC colleagues began reviewing high-priority needs to be included in Rwanda's Global Health Initiative Strategy, they did not know they would end up developing an innovative partnership.

The team was reviewing the statistics from the OGAC's latest gender-based violence report on Rwanda when they identified an area they knew they had to act quickly to address. "Rwanda has a serious problem with gender-based violence," explains Ahmed, Health Systems Strengthening Advisor for CDC-Rwanda. According to OGAC's report, 50% of all gender-based violence cases in Rwanda involve children under the age of 17. "Rape is very under-reported," she says. "We realized we needed

(continued)

Appendix (continued)

The Peace Corps volunteers works with women and children in schools and health care facilities across the country. The collaboration between the CDC and the Peace Corps occurred just when the Peace Corps were planning to train new groups of health volunteers to work in Rwanda. They offered to expand the training to include teaching the volunteers to identify the signs of gender-based violence—for free. Since neither the CDC, USAID, nor the Peace Corps had a candidate available in the country who could teach the segment on gender-based violence, the PEPFAR Project Manager for the U.S. DOD in Rwanda, who has expertise in the subject, stepped in to perform the March and April 2011 trainings.

Currently, the 42 health volunteers and their 73 Rwandan counterparts are working in 20 districts in Rwanda, using their skills to improve the lives of the country's children.

This program is a lesson in collaboration: By combining forces, the CDC, DOD, Peace Corps, and USAID accomplished a goal in just a few months, without creating a new organization or using new funding.

The CDC office in Rwanda was established in 2002 with support from the U.S. PEPFAR and the CDC Global AIDS Program. In 2006, the PMI and influenza programs were added. New projects on non-communicable diseases are being initiated. CDC-Rwanda has 34 staff members who specialize in epidemiology, laboratory, HIV prevention, care and treatment, health policy, surveillance and informatics, and program management, monitoring, and evaluation. CDC-Rwanda staff are co-located in the U.S. Embassy and Rwandan MOH.

to get people to the clinics.” The team also understood that there is a need to educate teachers, who have the greatest contact with the target population, to identify the signs of gender-based violence, abuse, and neglect among children.

Team members were mulling over how they would just do that, when they had a breakthrough. “We realized we have contact with a dedicated team which is already engaged with this community,” says Ahmed, referring to the Peace Corps volunteers who are working with women and children in schools and health care facilities across the country.

So the team turned to a partner with a strong grassroots reach, the Peace Corps, and explained their mission. The Peace Corps was planning to train new groups of health volunteers to work in Rwanda, and offered to expand the training to include teaching the volunteers to identify the signs of gender-based violence. Even more exciting was that the Peace Corps volunteered to expand the program for free. “That was music to our ears,” says Ahmed.

The last puzzle piece to fall into place was the trainer. Neither CDC, USAID, nor the Peace Corps had a candidate available in country who could teach the segment on gender-based violence. So Eugene Zimulinda, PEPFAR Project Manager for the U.S. DOD in Rwanda, who has expertise in the subject, stepped in to perform the March and April 2011 trainings. Currently, the 42 health volunteers and their 73 Rwandan counterparts are working in 20 districts in Rwanda, using their skills to make a difference in the lives of the country's children. “It was a very good exercise of using our own unique U.S. Government strengths,” says Ahmed. By combining forces, the CDC, DOD, Peace Corps, and USAID have accomplished something that was just a dream a few months ago, and without creating a new organization or using new funding.

Non-Narrative Replication 4

Narrative Replication 4

One Initiative, Many Gains

Kenya continues to have one of the highest rates of HIV in the world, and symptoms such as diarrhea, excessive weight loss, oral thrush, and skin infections are rampant among those affected with HIV. The CDC's Global health initiative, which is committed to improving the quality of life of those infected with HIV, offers solutions that can alleviate HIV-related symptoms at U.S. government-supported health clinics in the region.

One such treatment is called the “Basic Care Package,” which is used to treat HIV-related symptoms and prevent further illness. CDC Global AIDS Program public health researchers in Uganda developed the basic care package and through the support of federal partners, have been able to evaluate and expand the offering. It's a bundle

One Woman, One Community, Many Gains

Jemima is a woman living with HIV in rural western Kenya.

That, alone, does not make her unique. After all, rates of HIV in that region are among the highest in the world. Even so, Jemima set aside worries about her own infection and went to work. A go-getter, she founded a group in her community that offers emotional support and small loans to families touched by HIV.

But then Jemima's own HIV grew worse. A local volunteer found Jemima at home. She had diarrhea and had wasted to 77 pounds. Jemima was bedridden, and weak with oral thrush and skin infections. The volunteer quickly brought Jemima, her husband, and her sick grandchild to a U.S. government-supported health clinic.

There they received a “Basic Care Package” to treat their symptoms and to prevent further illness. CDC Global AIDS Program public health researchers in Uganda

(continued)

Appendix (continued)

of low-cost health interventions that have been documented to improve the health of those living with HIV. The package can prevent the most debilitating complications among people living with the infection, many of which start by using contaminated water.

Part of the Basic Care Package is a Safe Water System that has been documented to reduce diarrhea among persons with HIV by up to a third, at an affordable cost of US\$10 per family per year. The package includes other drugs that further reduce the unpleasant and dangerous complication by another third for about the same price.

This initiative has received support from many community-based organizations, with many community organizations now referring HIV-infected persons to U.S. government-supported clinics for treatment.

CDC is a key U.S. government agency supporting the implementation of the PEPFAR. Building on key relationships with international partners and our technical strengths in public health science, the CDC works with partner nations to build strong health systems that can respond to the global HIV/AIDS epidemic and to any disease that threatens the health and prosperity of the global community at large.

developed the basic care package and through the support of Federal partners, have been able to evaluate and expand the offering. It's a bundle of low-cost health interventions that have been documented to make a real difference in the health of those living with HIV. The package can prevent the most debilitating complications among people living with the infection. Many of these infections start by using contaminated water.

Part of the Basic Care Package is a Safe Water System that has been documented to reduce diarrhea among persons with HIV by up to a third, at an affordable cost of US\$10 per family per year. The package includes other drugs that further reduce the unpleasant and dangerous complication by another third for about the same price as a single movie ticket in the United States.

After receiving her Basic Care Package, Jemima bounced back dramatically and returned to promoting health interventions in her community. She sells health products to help support the eight sick and orphaned children she has adopted and remains a fervent advocate for the U.S. government-supported clinic, having referred more than 100 HIV-infected men, women, and children to receive care at the facility.

In Jemima, our Global Health Initiative saved not only a life, but a community treasure.

Note. CDC = Centers for Disease Control and Prevention; MOH = Ministry of Health; WHO = World Health Organization; EIS = Epidemic Intelligence Service; PMI = President's Malaria Initiative; KEMRI = Kenya Medical Research Institute; OGAC = Office of the U.S. Global AIDS Coordinator; USAID = U.S. Agency for International Development; PEPFAR = President's Emergency Plan for AIDS Relief; DOD = Department of Defense.

Acknowledgments

For their many contributions to the collaboration and their hard work all over the globe, the authors wish to thank (1) the team at the Center for Global Health at the Centers for Disease Control and Prevention; in particular, Marsha L. Vanderford, Kathryn Harben, and Terri L. Rodney-Brown; (2) Timothy Sellnow, Keri Stephens, Shari Veil, and the other members of the narrative working group; and (3) the community of scholars who participated in the Aspen engaged scholarship conferences. They also wish to thank Damion Waymer for his advice and contributions to the theoretical and practical value of the piece."

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

References

- Aakhus, M. (2007). Communication as design. *Communication Monographs*, 74, 112-117. doi:10.1080/03637750701196383
- Alhabash, S., & McAlister, A. R. (2014). Redefining virality in less broad strokes: Predicting viral behavioral intentions from motivations and uses of Facebook and Twitter. *New Media & Society*, 1-23.
- Appel, M., & Richter, T. (2010). Transportation and need for affect in narrative persuasion: A mediated moderation model. *Media Psychology*, 13, 101-135. doi:10.1080/15213261003799847
- Avraamidou, L., & Osborne, J. (2009). The role of narrative in communicating science. *International Journal of Science Education*, 31, 1683-1707. doi:10.1080/09500690802380695
- Barge, J. K., & Shockley-Zalabak, P. (2008). Engaged scholarship and the creation of useful organizational knowledge. *Journal of Applied Communication Research*, 36, 251-265.
- Berger, J., & Milkman, K. L. (2012). What makes online content viral? *Journal of Marketing Research*, 49, 105-205.
- Boyd, J. (2000). Actional legitimacy: No crisis necessary. *Journal of Public Relations Research*, 12, 341-353. doi:10.1207/S1532754XJPRR1204_3
- Browning, L. D. (1992). Lists and stories as organizational communication. *Communication Theory*, 2, 281-302.
- Centers for Disease Control and Prevention. (2014). *Why it matters*. Retrieved from <http://www.cdc.gov/globalhealth/>
- Cheney, G., Christensen, L. T., & Dailey, S. L. (2014). Communicating identity and identification in and around organizations. In L. L. Putnam & D. K. Mumby (Eds.), *The SAGE handbook of organizational communication* (pp. 695-716). Thousand Oaks, CA: SAGE.
- Clinton, H. R. (2011). *Internet rights and wrongs: Choices and challenges in a networked world*. Retrieved from <http://www.state.gov/secretary/rm/2011/02/156619.htm>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Crook, B., Stephens, K. K., Pastorek, A., Mackert, M., & Donovan, E. (2015). Sharing health information and influencing behavioral intentions: The role of health literacy, information overload, and the Internet in the diffusion of healthy heart information. *Health Communication*, 1-12. doi:10.1080/10410236.2014.936336
- Dailey, S. L., & Browning, L. D. (2014). Retelling stories in organizations: Understanding the functions narrative repetition. *The Academy of Management Review*, 39, 22-43.
- Dempsey, S., & Barge, J. K. (2014). Engaged scholarship as democratic conversation. In L. L. Putnam & D. K. Mumby (Eds.), *The SAGE handbook of organizational communication: Advances in theory, research, and methods* (pp. 665-688). Thousand Oaks, CA: SAGE.
- Dubriwny, T. N. (2012). *The vulnerable empowered woman: Feminism, postfeminism, and women's health*. New Brunswick, NJ: Rutgers University Press.
- Fisher, W. (1984). Narration as a human communication paradigm: The case of public moral argument. *Communication Monographs*, 51, 1-21.
- Fuster, V., & Kelly, B. B. (2010). *Promoting cardiovascular health in the developing world*. Washington, DC: National Academy of Sciences.
- Garrett, L. (2000). *Betrayal of trust: The collapse of global public health*. Washington, DC: Hyperion.
- Gelders, D., & Ihlen, Ø. (2010). Government communication about potential policies: Public relations, propaganda or both? *Public Relations Review*, 36, 59-62. doi:10.1016/j.pubrev.2009.08.012

- Gerrig, R. J. (1993). *Experiencing narrative worlds*. New Haven, CT: Yale University Press.
- Green, M. C. (2008). Research challenges in narrative persuasion. *Information Design Journal*, 16, 47-52. doi:10.1075/idj.16.1.07gre
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79, 701-721. doi:10.1037//0022-3514.79.5.701
- Green, M. C., Brock, T. C., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory*, 14, 311-327. doi:10.1111/j.1468-2885.2004.tb00317.x
- Green, M. C., Strange, J. J., & Brock, T. C. (Eds.). (2002). *Narrative impact: Social and cognitive foundations*. Mahwah, NJ: Lawrence Erlbaum.
- Guerrant, R. L. (1998). Why America must care about tropical medicine: Threats to global health and security from tropical infectious diseases. *American Journal of Tropical Medicine and Hygiene*, 59, 3-16.
- Harrison, T. R. (2014). Enhancing communication interventions and evaluations through communication design. *Journal of Applied Communication Research*, 42, 135-149. doi:10.1080/00909882.2013.825047
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76, 408-420. doi:10.1080/03637750903310360
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York, NY: The Guilford Press.
- Heath, R. L., Waymer, D., & Palenchar, M. J. (2013). Is the universe of democracy, rhetoric, and public relations whole cloth or three separate galaxies? *Public Relations Review*, 39, 271-279. doi:10.1016/j.pubrev.2013.07.017
- Heugens, P. P. M. A. R. (2002). Managing public affairs through storytelling. *Journal of Public Affairs*, 2, 57-70. doi:10.1002/pa.94
- Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, 34, 777-792. doi:10.1177/1090198106291963
- Hong, H. (2013). Government websites and social media's influence on government-public relationships. *Public Relations Review*, 39, 346-356. doi:10.1016/j.pubrev.2013.07.007
- Igarua, J.-J., & Barrios, I. (2012). Changing real-world beliefs with controversial movies: Processes and mechanisms of narrative persuasion. *Journal of Communication*, 62, 514-531. doi:10.1111/j.1460-2466.2012.01640.x
- Jackson, S. (1992). *Message effects research: Principles of design and analysis*. New York, NY: The Guilford Press.
- Jackson, S., & Brashers, D. E. (1994). *Random factors in ANOVA*. Thousand Oaks, CA: SAGE.
- Jackson, S., & Jacobs, S. (1983). Generalizing about messages: Suggestions for design and analysis of experiments. *Human Communication Research*, 9, 169-181.
- Jensen, J. D. (2008). Scientific uncertainty in news coverage of cancer research: Effects of hedging on scientists' and journalists' credibility. *Human Communication Research*, 34, 347-369.
- Jensen, J. D., King, A. J., Carcioppolo, N., & Davis, L. (2012). Why are tailored messages more effective? A multiple mediation analysis of a breast cancer screening intervention. *Journal of Communication*, 62, 851-868. doi:10.1111/j.1460-2466.2012.01668.x
- Jensen, J. D., King, A. J., Carcioppolo, N., Krakow, M., Samadder, N. J., & Morgan, S. (2013). Comparing tailored and narrative worksite interventions at increasing colonos-

- copy adherence in adults 50-75. *Social Science & Medicine*, *104*, 31-40. doi:10.1016/j.socscimed.2013.12.003
- Jones, J. M., & Saad, L. (2013). *Americans sour on IRS, rate CDC and FBI most positively*. Retrieved from <http://www.gallup.com/poll/162764/americans-views-irs-sharply-negative-2009.aspx>
- Kim, H. S., Bigman, C. A., Leader, A. E., Lerman, C., & Cappella, J. N. (2012). Narrative health communication and behavior change: The influence of exemplars in the news on intention to quit smoking. *Journal of Communication*, *62*, 473-492. doi:10.1111/j.1460-2466.2012.01644.x
- Klinger, U., & Svensson, J. (2014). The emergence of network media logic in political communication: A theoretical approach. *New Media & Society*. doi:10.1177/1461444814522952. Retrieved from <http://nms.sagepub.com/content/early/2014/02/18/1461444814522952.full>
- Kreuter, M. W., Holmes, K., Hinyard, L. J., Houston, T., Woolley, S., Green, M. C., . . . Erwin, D. O. (2007). Narrative communication in cancer prevention and control: A framework to guide research and application. *Annals of Behavioral Medicine*, *33*, 221-235. doi:10.1007/BF02879904
- Lammers, J. C. (2011). How institutions communicate: Institutional messages, institutional logics, and organizational communication. *Management Communication Quarterly*, *25*, 154-182.
- Lammers, J. C., & Barbour, J. B. (2006). An institutional theory of organizational communication. *Communication Theory*, *16*, 356-377.
- Moyer-Gusé, E., Chung, A. H., & Jain, P. (2011). Identification with characters and discussion of taboo topics after exposure to an entertainment narrative about sexual health. *Journal of Communication*, *61*, 387-406. doi:10.1111/j.1460-2466.2011.01551.x
- Moyer-Gusé, E., & Nabi, R. L. (2011). Comparing the effects of entertainment and educational television programming on risky sexual behavior. *Health Communication*, *26*, 416-426. doi:10.1080/10410236.2011.552481
- Murphy, S. T., Frank, L. B., Chatterjee, J. S., & Beazconde-Garbanati, L. (2013). Narrative versus nonnarrative: The role of identification, transportation, and emotion in reducing health disparities. *Journal of Communication*, *63*, 116-137. doi:10.1111/jcom.12007
- Nan, X., Dahlstrom, M. F., Richards, A., & Rangarajan, S. (2015). Influence of evidence type and narrative type on HPV risk perception and intention to obtain the HPV vaccine. *Health Communication*, *30*, 301-308. doi: 10.1080/10410236.2014.888629
- Niederdeppe, J., Bu, Q. L., Borah, P., Kindig, D. A., & Robert, S. (2008). Message design strategies to raise public awareness of social determinants of health and population health disparities. *Milbank Quarterly*, *86*, 481-513. doi:10.1111/j.1468-0009.2008.00530.x
- Niederdeppe, J., Shapiro, M. A., & Kim, H. K. (2014). Narrative persuasion, causality, complex integration, and support for obesity policy. *Health Communication*, *29*, 431-444. doi:10.1080/10410236.2012.761805
- Niederdeppe, J., Shapiro, M. A., & Porticella, N. (2011). Attributions of responsibility for obesity: Narrative communication reduces reactive counterarguing among liberals. *Human Communication Research*, *37*, 295-323. doi:10.1111/j.1468-2958.2011.01409.x
- O'Keefe, D. J. (2003). Message properties, mediating states, and manipulation checks: Claims, evidence, and data analysis in experimental persuasive message effects research. *Communication Theory*, *13*, 251-274. doi:10.1111/j.1468-2885.2003.tb00292.x
- O'Keefe, D. J. (2015). Message generalizations that support evidence-based persuasive message design: Specifying the evidentiary requirements. *Health Communication*, *30*, 106-113.

- Oliver, M. B., Dillard, J. P., Bae, K., & Tamul, D. J. (2012). The effect of narrative news format on empathy for stigmatized groups. *Journalism & Mass Communication Quarterly*, *89*, 205-224. doi:10.1177/1077699012439020
- Robinson, S. J., & Newstetter, W. C. (2003). Uncertain science and certain deadlines: CDC responses to the media during the anthrax attacks of 2001. *Journal of Health Communication*, *8*(S1), 17-34. doi:10.1080/713851980
- Schieber, G., Gottret, P., Fleisher, L., & Leive, A. (2007). Financing global health: Mission unaccomplished. *Health Affairs*, *26*, 921-934. doi:10.1377/hlthaff.26.4.921
- Sharf, B. F. (2001). Out of the closet and into the legislature: Breast cancer stories. *Health Affairs*, *20*, 213-218. doi:10.1377/hlthaff.20.1.213
- Slater, M. D., Rouner, D., & Long, M. (2006). Television dramas and support for controversial public policies: Effects and mechanisms. *Journal of Communication*, *56*, 235-252. doi:10.1111/j.1460-2466.2006.00017.x
- Stephens, K. K., & Malone, P. C. (2009). If the organizations won't give us information . . . : The use of multiple new media for crisis technical translation and dialogue. *Journal of Public Relations Research*, *21*, 229-239. doi:10.1080/10627260802557605
- Stephens, K. K., & Rains, S. A. (2011). Information and communication technology sequences and message repetition in interpersonal interaction. *Communication Research*, *38*, 101-122. doi:10.1177/0093650210362679
- Tavernise, S. (2014, October 15). CDC director becomes face of nation's worry and flawed response. *New York Times*. Retrieved from <http://www.nytimes.com/2014/10/16/us/cdc-director-becomes-face-of-nations-worry-and-flawed-response.html>
- Tukachinsky, R., & Tokunaga, R. S. (2013). The effects of engagement with entertainment. In E. L. Cohen (Ed.), *Communication Yearbook 37* (pp. 287-321). New York, NY: Routledge.
- Vanderford, M. L. (2003). Communication lessons learned in the emergency operations center during CDC's anthrax response: A commentary. *Journal of Health Communication*, *8*(S1), 11-12. doi:10.1080/713851961
- Weber, P., & Wirth, W. (2014). When and how narratives persuade: The role of suspension of disbelief in didactic versus hedonic processing of a candidate film. *Journal of Communication*, *64*, 125-144. doi:10.1111/jcom.12068
- Yang, S.-U., Kang, M., & Johnson, P. (2010). Effects of narratives, openness to dialogic communication, and credibility on engagement in crisis communication through organizational blogs. *Communication Research*, *37*, 473-497. doi:10.1177/0093650210362682
- Zebregs, S., van den Putte, B., Neijens, P., & de Graaf, A. (2015). The differential impact of statistical and narrative evidence on beliefs, attitude, and intention: A meta-analysis. *Health Communication*, *30*, 282-289. doi: 10.1080/10410236.2013.842528

Author Biographies

Joshua B. Barbour is an assistant professor of communication studies at the Moody College of Communication at the University of Texas at Austin. His research centers on the confluence of the macromorphic and communicative in organizing. He studies how and why individuals, groups, and organizations manage information and meaning and how we can (re)design conversations, change groups, and help individuals to do so with more sophistication. His work has been published in *Communication Monographs*, *Management Communication Quarterly*, *Communication Theory*, the *Journal of Health Communication*, and the *Journal of Communication*.

Marissa J. Doshi is an assistant professor of communication at Hope College. Her research draws on feminist perspectives to examine the cultural dimensions of media and technology practices of marginalized communities. Her work has been published in *Health Communication*.

Leandra H. Hernández is a communication associate faculty member in the Department of Arts & Humanities at National University. Her research interests fall into two main research areas: health communication, and representations of gender in the media. Her research on pre-natal testing and birth experiences is forthcoming in *Contexts of the Dark Side of Communication*, and her research on gender and reality television has been published in *Reality Television: Oddities of Culture* and is forthcoming in *Television, Social Media, and Fan Culture*.