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If you are quick enough, I will think about it: Information speed and trust in public health organizations

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ABSTRACT

Social media continues to gain prominence as an information resource. However, little is known about how people perceive trust and credibility in social media messages, particularly in terms of abstract dispositions toward organizations. The current experiment examines the role of speed of updates on a twitter feed with perceptions of trust. The experiment is also used to address the convergent validity of the RAND Public Health Disaster Trust Scale. The results do not provide evidence of a direct relationship between speed of twitter feed updates and trust, but do support a mediation model in which cognitive elaboration mediates the relationship. Further, the convergent validity of the RAND Public Health Disaster Trust Scale is discussed, along with its utility for future studies of this type.

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1. Introduction

Communication campaigns aimed at addressing public health concerns and other threats to the public were once viewed largely as events that took place after the fact. Contemporary thinking on the matter has shifted toward emphasizing message campaigns that take place before an emergency occurs, thereby becoming a continual process as opposed to a single reactive response (Coombs, 2007; Reynolds & Seeger, 2005). Thus, contemporary scholarship concerning information campaigns associated with public health have shifted away from crisis response and toward *risk communication*, or campaigns designed to make the public aware of threats and recommended responses before a health emergency occurs. Risk communication can be conceptualized as a subcomponent of health communication, as it focuses on information and preventative steps that can be taken in order to minimize the harm of an event that has not yet occurred. By constructing and disseminating compelling risk messages, health care organizations can prevent harm from future health risks.

1.1. Public health threats and media habits

Critical in the construction and dissemination of health risk messages is the public's need for control. A substantive body of research has suggested that good risk communication messages

stress self-efficacy by providing tangible behavioral steps that individuals can take to mitigate risks. Providing risk information without subsequent recommendations on how to respond may lead to feelings of hopelessness or antisocial responses, as audiences may view the situation as hopeless or experience excessive levels of fear (see Lachlan & Spence, 2007, 2009, 2010). Further, risk communication practitioners must consider message placement, as failure to reach at-risk audiences will inhibit audience ability to undertake the behavioral recommendations that are forwarded. Finally, and critically, communication campaigns concerning public health threats should serve to reduce uncertainty for those potentially affected by the threat.

A long history of research in the psychology literature points to the need to obtain information to reduce uncertainty (see Berlyne, 1960; Heath & Gay, 1997; Spence, Lachlan, & Griffen, 2007). Lack of understanding, especially of events that carry with them any degree of uncertainty, is a fundamentally uncomfortable psychological state. When people do not have the information they need concerning potential threats, they are overwhelmingly compelled to seek out that information (Heath & Gay, 1997; Spence et al., 2005). The motivation to seek information concerning a threat is especially great in high involvement threats, or those that may lead to great reward or great punishment. The desire to seek information is also particularly strong when the risk in question is largely unknown or is completely uncontrollable, as is the case with natural disasters and pandemics (Miller, 1987).

Media Dependency Theory offers insight into the underlying processes associated with patterns of information seeking and

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uncertainty reduction (Ball-Rokeach, 1985; Ball-Rokeach & DeFleur, 1976). This area of research has argued that individuals are largely dependent on media to make sense of phenomena that have not yet occurred or for which they would have no other frame of reference. Over time, as people become reliant on one particular source, that source will become trusted, and therefore more influential. Audience members then develop a series of sources they rely upon for information concerning different outcomes.

The dependency on media during times of crisis and public health threats is evident in the risk communication literature (Lachlan, Spence, & Seeger, 2009; Spence, Lachlan, & Burke, 2007). For example, Ball-Rokeach (1973) suggested that under conditions of tremendous ambiguity, individuals will look to those they consider experts and trusted media sources in order to resolve their uncertainty. Consistent with Media Dependency Theory, Ball-Rokeach (1985) and colleagues further argued that when faced with threats to health and well-being, reliance on trusted sources and perceived expertise will become more intense and people will also use them as a means of emotional release during the information seeking process.

When public health threats are impending, people can be expected to engage in specific information seeking patterns that are consistent with Media Dependency Theory (Brashers et al., 2000). Not only will individuals seek information from the media, they will seek information from organizations they trust for information concerning events similar to those at hand (Heath, Liao, & Douglas, 1995; Murch, 1971). It can be expected that the public will seek to obtain this information from public health organizations, given that those organizations are deemed trustworthy on public health issues. Thus, identifying the underlying psychological processes related to the identification of trustworthiness of public health organizations is critical to determining how to convince the public of that organization's credibility and the best practices for reaching and persuading audiences to take the appropriate actions under the circumstances.

Much of the research to date on the role of trust in mitigating health issues has revolved around the role of trust in reaching historically underserved communities, or those that may distrust public health organizations (Spence, Lachlan, Westerman, & Spates, 2013). This research has indicated that lower levels of trust concerning health organizations in the past, or specific bad personal experiences with health organizations, may impact contemporary interpretation of health messages and subsequent motivation to act upon (Rose, Peters, Shea, & Armstrong, 2004; Spence, Lachlan, Spates, & Lin, 2013; Thompson, Valdimarsdottir, Winkel, Jandorf, & Redd, 2004). Public health organizations and government entities must understand trust dynamics in order to best reach varying subpopulations during times of need. Finding best practices in response to health threats is largely contingent upon measuring and understanding abstract concepts, such as what it means to trust an organization as opposed to an individual (see Eisenman et al., 2012).

1.2. Trustworthiness and credibility

Trustworthiness in the communication literature is often measured as a form of credibility and categorized as one of three dimensions, typically expertise/competence (the perception that a person knows the truth), trustworthiness (the perception that a person will tell the truth if they know it), and goodwill (the perception that a person cares about the perceiver) (McCroskey & Teven, 1999). However, trustworthiness (as a measure of credibility) and institutional trust are different concepts, and an important difference between them may revolve around general reputation versus firsthand knowledge (see Eisenman et al., 2012; Mechanic, 1996). The RAND Public Health Disaster Trust Scale may be better

designed to examine issues of institutional trust and also has the advantage of being more parsimonious than McCroskey and Teven's (1999) Measure of Source Credibility. Though only four items, the Public Health Disaster Scale has been shown to have strong internal consistency, and indicates expected differences in institutional trust across demographic markers (Eisenman et al., 2012). Despite its use in previous studies concerning message speed and perceptions of information sources, the McCroskey and Teven (1999) scale is adapted from earlier research in interpersonal communication, and was designed to evaluate dispositions toward identifiable individuals, as opposed to organizations. This begs the question of the degree to which the Public Health Disaster Trust Scale will demonstrate convergent validity alongside previously used measures.

RQ1. Does the Public Health Disaster Trust Scale have convergent validity with previously used measures of trustworthiness, goodwill, and competence?

Although research has examined the importance of trust in reaching different audiences, little research has looked at the ways in which these processes may pan out in new media environments. This is problematic because public health organizations increasingly rely on new media technologies and social media to disseminate information about public health threats. Regardless of the target audience in question, it is unclear how message design and placement can be used to manipulate trust in public health organizations, and the underlying psychological mechanisms that may drive these trust processes. This leads to an examination of what is known about trustworthiness and source credibility in new media environments.

1.3. Credibility in social media

Social media use has skyrocketed in recent years is gaining acceptance as a legitimate form of information seeking (Pepitone, 2010). Leading the charge in terms of news and information, Twitter has developed into a significant information seeking resource (Morris, Teevan, & Panovich, 2010; Sin & Kim, 2013). Twitter is now the third largest information seeking social network, and is the largest devoted primarily to information seeking (Barnett, 2011; Parmalee & Bichard, 2012). Twitter has thus received significant interest from the academic community in recent years as a legitimate news source (Chen, 2011). Still, much is unknown about the ways in which people make their decisions regarding information seeking on Twitter, and the cognitive processes underlying evolutions of the credibility and trustworthiness of information found on Twitter feeds. Some evidence suggests that system-generated cues may influence cognitive elaboration, and that cognitive elaboration may be tied to subsequent appraisals of Twitter content (Westerman, Spence, & Van Der Heide, in press).

One of the most attractive features of Twitter as an information sources appears to be immediacy (Levinson, 2009). Defleur and Ball-Rokeach (1989), Eveland (2001) maintained that cognitive elaboration is the process of connecting newly obtained information with thoughts, memories, and scripts retrieved from personal experience. The literature on elaboration has forwarded that under highly rewarding or highly threatening situations, audiences will respond favorably to logical arguments because they will be compelled to actively process the information at hand (Petty & Cacioppo, 1986). Research in linear media has indicated that elaboration on mediated information is likely to lead to more learning (Fleming, Thorson, & Zhang, 2006).

In terms of the processes related to evaluations of public health organization trustworthiness in Twitter messages, Westerman et al. (in press) argued that the more immediate speed of updates

engender greater elaboration concerning the information at hand, and that (assuming good arguments have been made) this leads to more positive evaluations of Twitter information. In the context of health organizations, it may be the case that the link between update speed, subsequent elaboration, and appraisal of public health messages will lead to a greater degree of trustworthiness in the health organization disseminating that message. To address this possibility, the following hypothesis is forwarded:

H1. Speed of health information update will be positively related to cognitive elaboration, which will in turn positively predict trust in the organization responsible for the message.

2. Methods

2.1. Participants and procedures

A total of 258 participants were recruited from communication classes at a large university in the United States. An experimental procedure was utilized, offering three conditions in which the information was presented (immediate, recent, and delayed update speed). For the stimulus material, a Twitter page was created emulating that of the Centers for Disease Control. The feed then presented information concerning the flu season and the seasonal outbreak. Operationalization for these three conditions was as follows: immediate (most recent tweet being “1 min ago,” $n = 80$), recent (most recent tweet being “1 h ago,” $n = 115$) and delayed (most recent tweet being “1 day ago,” $n = 63$).

After viewing the Twitter feed, participants were asked to indicate their opinions of the CDC using the RAND Public Health Disaster Trust Scale (Eisenman et al., 2012), the Measure of Source Credibility (McCroskey & Teven, 1999) as well as a series of scales used in another study. The convergent validity of the Rand Public Health Disaster Trust Scale was tested in addition to the scale's applicability to social media environments.

Cognitive elaboration was measured using an adapted version of Perse's (1990) 5-item scale. Participants indicated their levels of agreement to a series of statements concerning the Twitter page along a five point Likert scale ranging from strongly agree to strongly disagree. An acceptable level of reliability was detected for the five items scale ($\alpha = .77$).

3. Results

In order to explore the possibility that the Rand Public Health Disaster Scale has convergent validity with the McCroskey and Teven (1999) scale used in previous research (Spence et al., 2013), a series of analyses examined the relationship between the two. Bivariate correlations were used to explore the relationship between the RAND scale and the subfactors of trustworthiness, expertise/competence, and goodwill on the McCroskey and Teven (1999) instrument. The results indicate strong evidence of convergent validity between the RAND scale and all three sub-factors of the Measure of Source Credibility. The Public Health Disaster Scale was strongly correlated with competence, $r = .476$, goodwill, $r = .476$, and trustworthiness, $r = .565$. All three correlations were statistically significant at $p < .001$ ($N = 250$).

The impact of message speed and cognitive elaboration on trust in public health organizations was then explored, using an adapted version of the RAND Public Health Disaster Trust Scale (Eisenman et al., 2012) as the dependent variable. Path analysis indicated strong support for the proposed model, $\chi^2(1) = .016$, $p < .899$. Goodness-of-fit tests indicated additional support for the model, CMIN/df = .016, CFI = 1.00, RMSEA = .000. The standardized regression coefficient for the link between message speed and cognitive

elaboration was .037; the standardized beta for the relationship between cognitive elaboration and positive attitudes toward the CDC was .163. This supports the notion that there is a small but significant relationship between speed of information diffusion and the degree of cognitive elaboration, and a more substantive significant relationship between cognitive elaboration and trust in the organization sending the message. Further, the data fit the overall proposed path model. These results indicate that speed of message diffusion may be an important factor to consider in triggering additional psychological processes that may lead to beneficial outcomes for organizations tweeting public health messages, as message speed seems to have an impact on cognitive elaboration, and cognitive elaboration subsequently drives trust in the organization in question.

4. Discussion

The current study addressed two issues. First, the relationship between Rand Public Health Disaster Trust Scale and the McCroskey and Teven (1999) Measure of Source Credibility was examined. Second, the relationship between the speed of information updates related to a seasonal flu outbreak, subsequent cognitive elaboration on the messages in question, and the extent to which this elaboration would lead to perceptions of trust in the organization disseminating the message was investigated.

The RAND Public Health Disaster Trust Scale was highly correlated with the three dimensions of trustworthiness from the McCroskey and Teven (1999) scale. These significant correlations suggest that the shorter Rand Public Health Disaster Trust Scale measures source credibility with fewer items, reducing the potential for respondent fatigue and potential cost in larger studies. These results also provide researchers an alternative measure when investing trust in an institution. Moreover, results of the study are consistent with past research suggesting that elaboration may be a key consideration in audience response to health information in social media. The data offer further evidence for the moderating effect of cognitive elaboration on the relationship between speed and trust. These findings are discussed further, and implications for public-health organizations will be addressed.

In considering the present data, the primary finding is that elaboration moderates a relationship between public health information speed on Twitter and subsequent evaluations of the trustworthiness of the organization. This is consistent with past research suggesting a machine heuristic (e.g., Westerman, Spence, & Van Der Heide, 2012; Westerman et al. (in press)). Elaboration on content presented in a timely and complete manner may lead people to process the information more centrally. This will likely lead to action on the part of the receiver, and engender a sense that the organization sending the information has the best interest of the audience in mind. This makes intuitive sense, as a trustworthy and conscientious organization would be quick to deliver timely and relevant information to his constituents. However, it is also intuitive in that one would have to elaborate upon the arguments themselves, and the intentions behind those arguments, in order to conclude that timeliness stems from conscientiousness. Results also suggest that public health practitioners should focus on the induction of elaboration in order to engender goodwill toward their organizations. Given the arguments of Media Dependency Theory, that people are more reliant on information sources that they deem not only useful but trustworthy, a focus on both speed and the induction of elaboration could, over time, lead to a scenario in which one's public-health organization is highly relied upon and especially effective in inducing remedial behaviors.

In terms of practical implications, public-health organizations, emergency responders and health practitioners who use social

media to communicate with the public may wish to focus on being consistently quick with their messages. The current findings suggest that slow message dissemination may lead to less audience elaboration on the matter at hand. Messages that are received quickly may be seen as more relevant, as breaking news, or as high involvement issues. If message speed leads to elaboration, then this is a critical consideration.

However, message speed comes with risk. If an assumption is made that speed of updates on twitter leads to a further elaboration, then this will lead audiences to respond in a potentially negative manner if incomplete, inaccurate, or misleading information is provided. In summation, the speed of updates on social networks is high-risk/high-reward. When well executed, speed and the attendant elaboration may engender trust in the public-health organization. When poorly executed, trust in the organization may be undermined. This is, however, an empirical argument, and one that should be explored in future research.

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