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Understanding the Effects of Stigma Messages: Danger Appraisal and Message Judgments

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Abstract

Media coverage of health issues has been criticized for creating health stigmas. The model of stigma communication (MSC, Smith, 2007) provides insights into why this is so, but it has two problems: Some of its mediators have not been supported, and it does not do a good job of predicting the transmission of stigma messages (i.e., social transmission). We present a revised model of stigma message effects in which exposure to stigma messages leads to stigma beliefs and stigmatization as a result of a person-oriented danger appraisal. In addition, message judgments—shock value and common ground—are introduced as mediators of the relationship between danger appraisal and social transmission. Participants ($N = 200$) were randomly assigned to read a health story written either with or without the intrinsic features of stigma messages. The revised model of stigma-message effects was supported: Reading a health news story written with (vs. without) the intrinsic features of stigma messages resulted in greater danger appraisal, which directly predicted stigma-related outcomes and indirectly predicted social transmission through message judgments. Social transmission varied by message judgment: Shocking messages were shared in ways that facilitate diffusion, but common ground messages were shared with influential others, suggesting different means by which stigma as a collective norm may emerge from interactions among community members.

Keywords

stigma messages; sharing; shocking; social networks; collective norms; gossip

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It takes your enemy and your friend, working together, to hurt you to the heart; the one to slander you and the other to get the news to you.

—Mark Twain, *Following the Equator*, 1897

In 2014, the world learned of the largest outbreak of Ebola in recorded history (Centers for Disease Control and Prevention [CDC], 2015) from health agencies through their press

releases to and interactions with media outlets. Although health agencies and media outlets likely intended to share the outbreak news to inform the public and promote behaviors to limit the epidemic's spread, the 2014 Ebola coverage has been described as stigmatizing (see, e.g., Cheung, 2015). This critique is not novel: Media coverage has been thought to be responsible for stigmas associated with other infectious diseases (e.g., Eichelberger, 2007), mental illness (e.g., President's New Freedom Commission, 2003), and suicide (e.g., World Health Organization, 2014). This critique suggests that stigma messages result in prejudicial thoughts and discriminatory actions by people exposed to them. Furthermore, the critique implies that stigma messages are diffused and become social facts (Durkheim, 1982) or collective norms (Rimal & Lapinski, 2015) that operate at the societal level and have the power to influence people's beliefs and actions.

The model of stigma communication (Smith, 2007, 2011) describes how messages with specific types of content evoke cognitions and affect that, in turn, result in stigma beliefs and stigmatization, including support for public policies regulating stigmatized people, interpersonal dissociation from stigmatized people, and the social transmission of the stigma messages. That said, the MSC is a complex model with several cognitive and affective mediators of stigma messages on stigma-related outcomes, but empirically (e.g., Smith, 2012, 2014) only two mediators – perceptions of danger and negative affect (anger, fear, and disgust) – have been shown to be strong, consistent predictors of stigma beliefs and stigmatization. Furthermore, one stigma-related outcome (social transmission) has not been predicted as strongly as other stigma-related outcomes by the MSC.

In this study, we describe a revised causal explanation of stigma message effects in which stigma messages result in stigma beliefs and stigmatization through one central mechanism: person-oriented danger appraisal. We also revise the MSC by including a new set of psychological mechanisms—message judgments—as mediators of the relationship between danger appraisal and social transmission. Finally, we explore patterns of social transmission in a hypothetical social network. This study, then, provides a scientific foundation for understanding why and how stigma messages influence those who receive them and how these messages spread through a social system because of interpersonal sharing.

Stigma Messages

Stigmas are simplified, standardized descriptions of the profound disgrace of a particular social group that have diffused within a larger community (Smith, 2007). For example, if people stigmatize others when no stigma is present, they may be punished by their community for dehumanizing someone. In contrast, if a stigma exists and people do not stigmatize others, then they are considered traitors to their community and may be punished (Smith, 2007). Stigmas mark more than difference: They designate a social group and its members as discredited, devalued, and disgraced (Goffman, 1963).

According to the MSC, a stigma message includes four intrinsic features: *marks*, *labels*, *etiology*, and *peril*. *Marks* are nonverbal cues that identify members of a stigmatized group. Marks evoke the strongest reactions when they are visible, disgusting features that can be recognized quickly and remembered easily (Smith, 2007, 2011). *Labels* identify and name a

stigmatized group (e.g., Link & Phelan, 2001). Labels arouse and reflect social cognitions, such as considering stigmatized people to be a distinct group, highlighting intergroup differences, encouraging categorization, and promoting stereotypes (Smith, 2007, 2011). *Etiology* describes why people have a stigmatizing condition, including its causes and people's agency, awareness, or opportunity to choose to join or be associated with members of the stigmatized group.¹ Etiology content describes stigmatized people's voluntary decisions to violate their social responsibilities and engage in taboo activities (Smith, 2007, 2011). Such etiology fosters the development of stereotypes about stigmatized people as morally flawed and undeserving of the rights of group membership. *Peril* links stigmatized people to physical, neurological, and social threats, such as pain, death, aggression, and taboo behavior (Smith, 2007, 2011, 2012).²

Person-Oriented Danger Appraisal

We propose a revised model of stigma-message effects (see Figure 1), in which a person-oriented danger appraisal mediates the effects of stigma messages on stigma beliefs and stigmatization. Danger appraisal involves perceiving people as dangerous and feeling threatened by them. The more that a stigmatized group and its members are thought to be able and likely to harm the rest of the community by their presence and actions, the more they are perceived as dangerous (Smith, 2007). For example, stigmatized people may have chosen to engage in undesirable practices linked to negative consequences. This danger perception focuses on people (Smith, 2014), which contrasts with cognitions, such as perceived threat (e.g., Witte, 1992) that focus on the health condition (e.g., infectious disease). The affective component of danger appraisal is feeling threatened (Haidt, 2003), which is a person-oriented sentiment associated with disgust, anger, and fear toward those who threaten others' wellbeing.

This person-oriented danger appraisal is consistent with work in evolutionary psychology on how people relate to threats. To survive, humans developed mechanisms to detect threats to their physical safety and health (Neuberg & DeScioli, 2015). Humans rely on each other for survival. It is as if people need to understand and craft social contracts, and to detect and reject those who fail to abide by these contracts (Cosmides & Tooby, 2015). People have developed a generalized detection system, informed by experience and socialization, to recognize and react to threats. Their response depends on whether the threat is linked to the physical environment (e.g., lightning strikes or mosquitoes) or from people who threaten effective group functioning (Cosmides & Tooby, 2015; Neuberg & DeScioli, 2015). Danger appraisal includes both the arousal of relevant emotions and cognitions to mount a defense to social threats.

The use of danger appraisal as a mediator is consistent with the causal logic of the MSC, and with experimental tests of the MSC (Smith, 2012, 2014); however, our revised model also

¹Etiology should not be confused with susceptibility (e.g., Witte, 1992). *Etiology* describes why one has the stigmatized condition. *Susceptibility* describes the likelihood of contracting a problematic condition. Perceived susceptibility is the belief in one's risk of contracting the problematic condition (Witte, 1992). An experimental test of stigma message content showed that the level of perceived susceptibility was the same regardless of etiology (Smith, 2014).

²Although marks, labels, etiology, and peril may be qualities of health conditions, communicators can choose whether to include or emphasize this content in their messages.

includes a new set of psychological mechanisms to better understand why people share stigma messages with others in their social networks. We now consider this revision.

Social Transmission of Stigma Messages

One claim in stigma research (e.g., Goffman, 1963; Link & Phelan, 2001) is that stigma messages are shared among community members so that they learn to recognize, devalue, and discriminate against the stigmatized (Smith, 2007, 2011). The MSC (Smith, 2007) predicts that stigma messages shape the exposed receiver's stigma beliefs and behaviors directly and motivate people to share stigma messages with others. This prediction is consistent with the two-step flow (E. Katz, 1957): Some people may be exposed to stigma messages in the media, and then they share the media's messages with others in their social network. However, this transmission prediction for stigma messages has not been borne out by research (e.g., Smith, 2012). Drawing on social transmission research (Berger, 2014; Cappella, Kim, & Albarracín, 2014), we considered two message judgments to understand social transmission of health news stories: the shock value of the message and the extent to which the story reveals a common ground with others with whom one may communicate.

Shocking.

To make positive impressions on others, people share entertaining information (Berger, 2014; Cappella et al., 2014). *Entertaining* has been defined as “interesting, surprising, funny, or extreme” (Berger, 2014, p. 590). However, health news is unlikely to be assessed as funny. Rather, the shock value of a message is what is important in this context; we consider *shocking* to be a combination of surprise and extremity. Stigma messages connect people with calamitous consequences for the community in ways that highlight the stigmatized individuals' deviance and question their morality (Smith, 2007), which may be perceived as shocking. People share shocking messages with others (Heath, 1996) and in our society they share shocking health stories with others through email (Kim, 2015).

Common ground.

The second message judgment, common ground, taps into a less studied motivation for social transmission of messages, social bonding. In general, sharing messages with others can facilitate social relationships (Dunbar, 2004) by reinforcing shared views and ingroup inclusion (Berger, 2014). Social bonding should motivate people to share messages about topics of common interest, referred to as *common ground* (Berger, 2014). By discussing topics on which people have common ground, people can contribute to a conversation, which can bond them (Clark & Kashima, 2007). Berger explained that this is why people talk about the weather: It is something everyone has in common and can discuss. Dunbar (2004) explained that this is the appeal of gossip, which he defined as “conversation about social and personal topics” (p. 108). Gossip allows people to learn what is happening with and to the people around them; this information plays an important role in the functioning of groups, with social bonding being the single most important function (Dunbar, 2004).

Stigma messages highlight threats to the community imposed by persons who violate or appear to violate social norms, creating the perception of stigmatized people as dangerous.

The danger perception allows people to share contempt for the stigmatized, which promotes bonding among the nonstigmatized (Keltner & Haidt, 1999). Stigma messages also evoke emotions (fear, anger, and disgust) that are likely to generate consistent reactions (Heath, Bell, & Sternberg, 2001), which produces a shared emotional experience that can increase a sense of group cohesiveness (Lawler, Thye, & Yoon, 2000).

To summarize the previous sections, the hypothesized model of stigma-message effects (see Figure 1 for the structural equation model) considers danger appraisal as the central mechanism by which exposure to a stigma message leads to stigma beliefs and actions. The danger appraisal is conceptualized as the primary mechanism to address a threat to a group's wellbeing from other people. In addition, danger appraisal leads to judgments of the stigma message as shocking and having common ground, which in turn, leads receivers to share it with others in their social network. Our model, then, presumes two appraisals for sharing: an appraisal of the danger followed by an appraisal of message qualities: the message's shock value and common ground.

In both stigma and interpersonal sharing research (e.g., Berger, 2014), little attention has been paid to how messages are spread through social systems such as friendship networks. We explore these potential patterns of interpersonal sharing next.

Sharing Patterns

Existing research has focused on sharing stigma messages to recipients of different relational types (e.g., family and neighbors; Smith, 2012, 2014) or sharing different types of messages based on audience size (e.g., one person vs. groups of two vs. larger groups; Barasch & Berger, 2014). The lack of attention to patterns of interpersonal sharing within a social network is problematic because sharing has implications for how interpersonal communication creates social facts (Durkheim, 1982) or collective norms (Rimal & Lapinski, 2015).

Both social facts (Durkheim, 1982) and collective norms (Rimal & Lapinski, 2015) are defined as social level beliefs about actions, thoughts, and feelings of community members that have the power to influence an individual member's beliefs and actions. Social facts operate at the societal level (e.g., the nation; Durkheim, 1982), whereas collective norms may operate at the social network level (Rimal & Lapinski, 2015). Because this study focuses on social networks, we refer to collective norms as the mechanism by which consensual ideas become social forces.

Collective norms "signify the overall social milieu within which behaviors occur" (Rimal & Lapinski, 2015, p. 397). Collective norms have different forms, such as descriptive and injunctive norms. *Descriptive norms* are beliefs about what people within a social network are believed to be doing; *injunctive norms* highlight the actions that are approved or disapproved (Cialdini & Goldstein, 2004; Rimal & Lapinski, 2015). Although it can be difficult to distinguish descriptive and injunctive norms (e.g., Yzer, 2012), both types of norms predict individual behavior (for reviews, see Cialdini & Goldstein, 2004; Rimal & Lapinski, 2015) and are associated with diffusion (Rogers, 2003).

We explored four patterns of sharing within social networks that may facilitate the creation of collective norms (a quantitative introduction to diffusion may be found in Lave & March, 1993). To inform a community quickly, people should share a stigma message with everyone in their network (analogous to the broadcast of a town crier). For example, in a study tracking the diffusion of the news of President Kennedy's assassination, 46% of participants reported that they heard about the news from either a stranger or an acquaintance, compared to 30% who heard it from a friend (Banta, 1964). A second possibility, which takes less effort than approaching everyone in a social network but limits its spread, is that people share a stigma message with directly connected others. Sharing the stigma message with personal connections also serves as an ingroup defense to "circle the wagons"; this is a selection process, in which one person seeks out similar others (Newcomb, 1961). A third strategy, which allows a message to reach everyone with less effort than approaching them personally, is to share the message with people who themselves have social reach: those who can spread a stigma message quickly through the social system because they are relationally closer to everyone else in the social network. Finally, a fourth possibility is that people share a stigma message with socially powerful others who can regulate and enforce collective norms (Bandura, 1977; Rogers, 2003).

The first three strategies provide a means to create descriptive norms: As more network members react to a message and start stigmatizing a targeted group, this stigmatization can become a typical or normal act. The fourth strategy, in contrast, provides a means to shape injunctive norms. People are motivated to comply with injunctive norms to achieve affiliation-oriented goals (Cialdini & Goldstein, 2004). People want to affiliate with powerful others and gain their social approval (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955). By sharing a stigma message with socially powerful people, the sharer may strengthen personal bonds with important others and the message may gain social traction.

The third and fourth patterns of sharing are explored using two forms of network centrality. *Closeness centrality* (Freeman, 1979) involves the distance it takes one network member to reach everyone else directly and through intermediaries. A person with high closeness centrality can reach everyone else through few intermediaries; they have social reach. In contrast, *eigenvector centrality* (Bonacich, 1972) means having ties to those who have ties to many others (Borgatti, 2005). In a friendship network, a person with high eigenvector centrality does not need to maintain many friendships personally but is strategically tied to people who have many friends. Eigenvector centrality is closely related to influence measures proposed by L. Katz (1953), Hubbell (1965), and Coleman, Katz, and Menzel (1966), among others.

To illustrate these four patterns, we use a sociogram as a representation of social relations among actors (Freeman, 2000). Consider the sociogram of friendships in Figure 2. Imagine that the person labeled with the letter *m* has read a message and considers sharing it with others. The town crier pattern suggests that because *m* judges there to be more danger, the message to be more shocking, and the message as having common ground, *m* will share the stigma message with people in the network without regard to their position in the network. The second pattern, circling the wagons by telling friends, would lead *m* to share the message with *i*, *j*, and *q* (the persons directly tied to *m*). The third pattern, sharing with those

who can reach others through their network connections, would lead *m* to share the message with either or both *h* and *i* (the persons with the greatest social reach). Finally, the fourth pattern, sharing with the well-connected, would lead *m* to share the message with either or both *d* and *g* (the persons with the greatest structural influence).

To date there has been no attention in sharing research (e.g., Berger, 2014) as to who receives such messages in terms of their relational distance to the sharer or in terms of their strategic ability to promote the diffusion of the message. Message judgments may be related to sharing patterns because they satisfy similar goals for interpersonal communication. For example, sharing shocking messages and being influenced by descriptive norms have both been associated with making positive impressions on others. Sharing common ground messages and being influenced by injunctive norms have both been associated with social affiliation and bonding. To that end, we explored which types of sharing (to more people, to a greater percentage of personal friends, to well-connected members, and to members with social reach) were associated with messages judged as shocking and as having common ground.

Pass It On: Direct Request to Reshare

In the previous section we explored different sharing patterns. Despite their differences, their effect is to spread a stigma message to others in the social system who were not directly exposed to it. It would help to diffuse a stigma message if those who learned of it from their initial contact spread it to others. This difference between initial sharing versus resharing is consistent with terms like transmission (Rosnow, 1991) and retransmission (Cappella et al., 2015). Encouraging resharing should accelerate the rate at which a stigma message is spread throughout a social system and creates a social fact. Stigmas are argued to be universal because they provided early humans a social defense against threats to group living (Smith & Hughes, 2014). To benefit a group, members need to learn as quickly as possible about any danger.

What could a sharer do to increase the likelihood that a recipient would share a stigma message with others? Put differently, why do people share second-hand information, hearsay or gossip? One reason is that the initial sharer encourages the recipient to do so. The spread of a stigma message should be greater when the sharer encourages message recipients to share it with others. Sharing, then, becomes more than retransmission of the message; it also includes, implicitly or explicitly, a persuasive appeal in which the sharer attempts to gain the recipient's compliance to continue to spread the stigma message. The most common form of compliance, especially for initial requests, is the direct request (King, 2001). Although more sophisticated strategies such as pregiving (Dillard, 1990; Marwell & Schmitt, 1967) are equally effective in gaining compliance from friends (Boster, Rodriguez, Cruz, & Marshall, 1995), the direct request is the most efficient way to encourage retransmission without being impolite (Kellermann & Shea, 2009). We expect that a health news story with the intrinsic features of a stigma message (vs. news without those features) will be shared more often with a direct request for the recipient to pass it on to others.

Method

Participants

This study was conducted through Amazon's Mechanical Turk (see Mason & Suri, 2012, for guidance on use of this system) and was restricted to US citizens. Participants were paid \$5.00 to complete a survey; most completed it in less than 30 minutes ($M = 24$ min, $Mdn = 23$ min, $Minimum = 11$ min, $Maximum = 46$ min). Before analyzing their answers, we checked the open-ended answers to assess whether participants' answers were words used to represent thoughts that were related to our study. All of the participants provided answers that were understandable and on topic. Participants ($N = 200$; 56% male, 44% female) self-identified as White (80%), African American (11%), Asian (5%), and American Indian or Alaska Native (1%); participants could self-identify with more than one category. Seven percent self-identified as Hispanic. The average age of participants was 33 years ($SD = 10.11$, $Mdn = 30$, $Minimum = 19$, $Maximum = 68$; skewness and kurtosis $< |1.3|$). The highest education level they reported receiving was some high school (1%), high school graduate (16%), college but no degree (24%), an associate's degree (14%), an undergraduate degree (36%), and some graduate school (9%).

Design and Stimulus

The study was a 2 (stigma-message content: high vs. low) between-subjects design in which the dependent variables (stigma beliefs, regulation support, social distancing, and sharing) were measured after exposure to a written health news story.

Formative research for the health news story.—An infectious disease was selected as the stigmatizing health condition. After consultation with infectious disease specialists, researchers gave the condition a fictitious name, the *Maculo* virus, which did not represent any known disease. A pilot study (college students, $N = 219$) was conducted to select the most relevant content to instantiate the intrinsic features of stigma messages from candidate phrases from media stories about real infectious diseases posted by the CDC and based on theoretical differences described in the MSC (Smith, 2007).

Marks should be easily identifiable and repulsive (Smith, 2007). Pilot participants were given examples of 13 different disease symptoms and asked to judge the ease of identifying them and their repulsiveness with separate items on 5-point scales (1 = *not at all*, 5 = *extremely*). The most easily identifiable and repulsive symptom was "open, weeping sores on the arms" (identifiable: $M = 4.29$, $SD = 1.01$, 95% CI [4.16, 4.42]; repulsive: $M = 3.57$, $SD = 1.10$, 95% CI [3.42, 3.72]); the least was "headaches" (identifiable: $M = 2.51$, $SD = 1.12$, 95% CI [2.36, 2.66]; repulsive: $M = 1.34$, $SD = 0.87$, 95% CI: [1.22, 1.46]).

Labels should identify and name groups (Smith, 2007). Pilot participants were shown 12 references to infected people and asked to judge them with one item related to considering the affected people as a distinct, social group, on a 5-point scale (1 = *not at all*, 5 = *a great deal*). The most distinguishing label was "infected people" ($M = 3.92$, $SD = 1.12$, 95% CI [3.77, 4.07]) and "those infected with" ($M = 3.79$, $SD = 1.35$, 95% CI [3.61, 3.97]); the least

were “victims of” ($M = 2.77$, $SD = 1.28$, 95% CI [2.60, 2.94] and “people living with” ($M = 2.68$, $SD = 1.18$, 95% CI [2.52, 2.84]).

Etiology for transmission should be controllable and taboo (Smith, 2007). Pilot participants were given examples of nine different ways to contract an infectious disease and asked to judge (1) control over avoiding the spread of an infection in a particular way and (2) the tabooess of the transmission behavior with two different 5-point scales (1 = *not at all*, 5 = *a great deal*). The most controllable and taboo etiology was “contact with an infected person’s blood into an open wound” (control: $M = 4.31$, $SD = 0.76$, 95% CI [4.21, 4.41]; taboo: $M = 3.76$, $SD = 1.31$, 95% CI [3.59, 3.93]); the least was “bitten by a mosquito” (control: $M = 2.33$, $SD = 0.89$, 95% CI [2.21, 2.45]; taboo: $M = 1.49$ and $SD = 0.87$, 95% CI [1.37, 1.61]).

Peril highlights the danger posed to the community (Smith, 2007). Pilot participants were given examples of 13 different outcomes of an infectious disease and asked to judge each with one item referring to danger on a 5-point scale (1 = *not at all*, 5 = *quite a bit*). The highest danger scores appeared with these consequences: “fatal” ($M = 4.07$, $SD = 1.27$, 95% CI [3.90, 4.24]), “pain” ($M = 3.57$, $SD = 1.27$, 95% CI [3.40, 3.74]), “hallucination” ($M = 4.04$, $SD = 0.95$, 95% CI [3.91, 4.17]), and “aggression” ($M = 4.18$, $SD = 0.96$; 95% CI [4.05, 4.31]). The low-stigma condition was created as a contrast to these concerns (e.g., rarely fatal).

Table 1 shows the message used for the two health news stories. The high and low versions of the news story scored 49 and 48, respectively, on the Flesch Reading Ease test (readable by people aged 15 years and higher); the Flesch-Kincaid Grade Level was 10 for both versions (both tests were performed in Microsoft Word). The high stigma message had more words (183 words) than the low stigma message (161 words). Participants judged how much they found the message to be useful with three items (useful, credible, and important). Responses, marked on 5-point scales (1 = *strongly disagree* to 5 = *strongly agree*), were averaged into one score (Cronbach’s $\alpha = .77$). Usefulness did not differ between conditions: a news story with high ($M = 4.32$, $SD = 0.67$) or low ($M = 4.18$, $SD = 0.74$) stigma-message content were seen as equally useful, $t(198) = 1.38$, *ns*, $r = .10$.

Procedures

A university Institutional Review Board approved this study before data were collected. After providing consent, participants were randomly assigned to one of the two conditions and then shown either the health news story with low stigma-message content or the version with high stigma-message content. The instructions explained that the information in the news story was based on real, existing CDC news stories about real diseases, but that there was not an outbreak of the infectious disease currently in the United States. Next, participants were asked to judge the message’s shock value and common-ground qualities. Participants were then asked to imagine that the health news story that they had just read described a real situation and to complete scales for perceiving infected people as dangerous and feeling threatened by them. They then were asked to complete the scale for stigma beliefs and action (regulation support and social distancing).

Next, participants were shown a sociogram (created by Ortiz-Arroyo, 2010, to highlight nodes with varying forms of centrality; see Figure 2), which was described as a friendship network. The sociogram was displayed in a group layout (i.e., nodes in the same group are closer together, and different groups are visually separated) with minimum edge-crossing (i.e., minimizing the number of lines between nodes that cross each other, such as the lines connecting *g* to *b* and *e* to *d* in the figure). It has been found that viewers process sociograms displayed with group layouts and minimum edge-crossing more quickly and accurately than sociograms with other layouts (e.g., Huang, Hong, & Eades, 2005). The network size (19 members) and interpersonal connections (from 1 to 6) was consistent with studies of self-reported friendship networks (Brewer & Webster, 1999) and reciprocated phone calls between people (Mac Carron, Kaski, & Dunbar, 2016).

The participants were asked to imagine that the sociogram represented their friends and the friends of their friends whom they might not know well. Nineteen people were represented in the sociogram, including the focal person (the participant). Participants were asked to imagine that the circles represented them and these 18 other people, and that the lines represented friendships between pairs of people. Participants were then asked for their thoughts about the sociogram as a representation of social relationships in their life. This procedure for instantiating a social context in which to consider social interaction draws upon early work in perceptual sociometry (e.g., Moreno, 1954) and has been tested as a stimulus in recent experiments (e.g., Igarashi & Kashima, 2011; Smith & Fink, 2015). A concern in dealing with this procedure is the accuracy in social network perception, which has been defined as “the degree of similarity between an individual’s perception of the structure of informal relationships in a given social context and the actual structure of those relationships” (Casciaro, Carley, & Krackhardt, 1999, p. 287). This procedure depends on *global accuracy*, which refers to “the perception of the complete set of social relationships linking all members of a social network” (Casciaro, Carley, & Krackhardt, 1999, p. 287). Casciaro et al.’s study found that people’s ($N = 24$) reports of their friendship structural network and the actual matrix created by reports from the network members seem to correlate at .42, $p < .05$, 95% CI [.37, .47].

To check the mundane realism of our friendship sociogram (Aronson, Wilson, & Akert, 1994), participants responded to six items, marked on 5-point scales (1 = *strongly disagree* to 5 = *strongly agree*), which asked whether the sociogram was believable, credible, realistic, plausible, reasonable, and conceivable. A confirmatory factor analysis, using maximum likelihood estimation, was conducted and produced acceptable model fit: $\chi^2(9, N = 200) = 64.31$, $p < .05$, SRMR = .03, CFI = .97, RMSEA = .06, 90% CI [.05, .08]. The responses to the six items were averaged ($\alpha = .95$). Participants judged the sociogram to be believable ($M = 4.28$, $SD = 0.70$); the positive difference from the midpoint (3) was statistically significant, one-sample $t(199) = 25.83$, $p < .05$, two-tailed, Cohen’s $d = 3.66$.

Next, participants were asked to imagine that the researchers had gathered information about the social relationships in their life and to identify the letter of the node representing themselves. They were also asked to imagine that no one in the network had been infected with the virus. Participants were asked if they would attempt to share the health news story they read with anyone in the friendship sociogram and, if so, to identify with whom they

would share it. Participants were encouraged to identify as many people as they wanted, and were told that they could identify people with whom they were not directly connected in the sociogram. Participants who selected at least one member of the network were asked to identify whom they would try to reach first. Next they were given a fictitious website address and were asked to imagine that they read the news story online and that they were sending an email to that first person. They were asked to provide in an open-ended text box what they would write to the person. These procedures replicate the means by which some online news sites allow people to email news articles to other people (Kim, 2015). At the end of the survey, participants provided demographic information, and were thanked for their participation.

Measures

A confirmatory factor analysis of scales—dangerous (6 items), threatened (3 items), shocking (3 items), common ground (4 items), regulation support (8 items), social distancing (3 items), and stigma beliefs (11 items)—was estimated with maximum likelihood in AMOS (Version 23); the seven factors were treated as exogenous and were allowed to covary, but the error terms of the measured items were not. The criteria for model fit for datasets smaller than 250, as suggested by Hu and Bentler (1999), were used (e.g., SRMR < .09). The measurement model showed reasonable fit: $\chi^2(644, N = 200) = 1,612.96, p < .05$, SRMR = .07, RMSEA = .08, 90% CI [.08, .09]. Unless otherwise noted, response were marked on 5-point scales (1 = *strongly disagree* to 5 = *strongly agree*), with higher scores indicating more of the composite variable. All scale items are available from the first author.

Danger appraisal.—Six items (Cronbach's $\alpha = .93$) were used to assess the *perceived danger* of infected people (e.g., putting others in danger and dangerous to be around). Three items (Cronbach's $\alpha = .92$) were used to assess the degree to which participants felt *threatened* by infected people. Responses were marked on 11-point scales (0 = *not at all* to 10 = *very much*). Perceived as dangerous and feeling threatened were correlated, $r(198) = .78$.

Shocking.—Three items (Cronbach's $\alpha = .87$) were used to assess the degree to which participants judged the message to be shocking (surprising, shocking, and alarming).

Common ground.—Four items (Cronbach's $\alpha = .82$) were used to assess the degree to which participants judged the message's topic as having common ground (e.g., everyone can relate to it, everyone can comment on it).

Regulation support.—Eight items (Cronbach's $\alpha = .93$; Smith, 2012) were used to assess participants' support for ways to manage infected people (e.g., treating infected persons even if they did not want to be treated).

Social distancing.—Three items (Cronbach's $\alpha = .93$) were used to assess the degree to which participants would distance themselves from infected people (e.g., avoiding interpersonal interactions).

Stigma beliefs.—Eleven items (Cronbach's $\alpha = .92$) were used to assess stigma beliefs (adapted from Link et al., 1989, replacing references to mental illness with *Maculo* virus).

Sharing.—Participants were asked if they would attempt to share the health news story they read with anyone else in the friendship sociogram and, if so, to identify those with whom they would share it. They could select as many people as they wanted, and if they did not want to share the news story they could select “no one.” (Note that the participants complied with these instructions; every participant who did not select anyone by letter selected “no one.”) Their selections were to differ from their self-identified position, which they were shown from their earlier answer. Participants were reminded that they could pick anyone in the network, even if they did not have a direct friendship connection with that person. The number of recipients selected was the measure of *total sharing* (possible range from 0 to 18). The percent of friends (persons directly connected to each participant's self-identified position in the figure) selected by the participant to receive the news was the measure of *percentage of personal friends* who were selected to receive the message (possible range from 0 to 100 percent). For example, the node labeled *j* has seven friends (*m*, *l*, *k*, *p*, *i*, *n*, and *o*). If a participant who self-identified as *j* shared the message with *m*, that participant would get a score of 14% for personal friends (1 out of 7).

Within the sociogram, two nodes (*d* and *g*) have the highest eigenvector centrality and two other nodes (*h* and *i*) have the highest closeness centrality. A code was created to represent selecting either network member high in eigenvector centrality (1 = *selecting either one or both of the highest eigenvector-centrality targets*; -1 = *selecting neither target*) and another code for selecting either network member high in closeness centrality (1 = *selecting either one or both of the highest closeness-centrality targets*; -1 = *selecting neither target*).³

Direct request to reshare.—Two researchers (blind to the stigma condition) independently coded if participants' open-ended responses for the presence of a direct request to pass the health news story onto someone else. Following Kellermann and Cole (1994), a direct request was defined as asking or stating what the influencer wants the other person to do without providing any reasons for compliance (e.g., “pass it on”). The coders produced the same ratings (Krippendorff's $\alpha = 1$). Responses were coded such that 1 = *direct request present* and -1 = *direct request not present*.

Results

Testing the Hypothesized Model

We proposed a model of stigma-message effects (see Figure 1) in which exposure to high (vs. low) messages was predicted to result in stronger stigma beliefs and stigmatization through a person-oriented appraisal of danger. Further, we extended the model to include message judgments as mediators between danger appraisal and social transmission. Social

³For participants who self-identified with one of these four nodes (*d*, *g*, *h*, or *i*), the expected likelihood of selecting the other node with the same centrality was 1/18, whereas it was 2/18 for those who did not identify with one of these nodes. To address the conditional nature of this measure, we allowed those who self-identified with one of the highest eigenvector centrality nodes (*d* or *g*) to select the other (unchosen) node as well as the node with the next highest eigenvector centrality. We used the same procedures for coding the closeness centrality selections.

transmission was instantiated as the total number of network members with whom participants would share the health news story. Total sharing was positively skewed (2.58) and leptokurtic (6.25), so the data were transformed by taking an original value's square root before it was used in the rest of the analyses (Fink, 2009; transformed variable's skewness = 1.00, $SE = 0.67$, transformed variable's kurtosis = 1.58, $SE = 0.84$).

The structural equation model (which included the theory and measurement submodels) was estimated with maximum likelihood in AMOS using the covariance matrix; neither the errors of prediction nor the errors of measurement were allowed to covary. The parameters were estimated using bootstrapping procedures (2,000 bootstrap samples) and bias-corrected confidence intervals (Hayes & Scharkow, 2013). For the second-order factor of danger appraisal, a path was fixed to 1 for the first-level variable (e.g., dangerous) and a second-level variable (danger appraisal) to assign a metric for each latent variable at each level. The stigma message variable was coded with 1 = the high stigma condition and -1 = the low stigma condition.

The hypothesized model showed reasonable goodness of fit (Hu & Bentler, 1999): $\chi^2(732, N = 200) = 1,780.21, p < .05$, SRMR = .08, RMSEA = .08, 90% CI [.06, .09].⁴ With $N = 200$ and $df = 732$, the power to detect a close-fitting model (RMSEA = .05) versus a perfectly fitting model (RMSEA = .00) at $p < .05$ was greater than .999 (Preacher & Coffman, 2006). The model results appear in Figure 3. All parameters were significant at $p < .05$ with both the maximum likelihood and bootstrapping procedures. Parameters shown on the paths in Figure 3 are standardized regression weights. The correlations of composite scores in the model appear in Table 2. Unstandardized estimates and standard errors are available from the authors.

As predicted, high (vs. low) messages predicted greater danger appraisals, which, in turn, predicted stronger stigma beliefs and stigmatization. In addition, greater danger appraisal predicted greater judgments of the message as shocking and as having common ground; both message judgments predicted greater social transmission.

To assess danger appraisal as a mediator between message condition (high vs. low stigma) and stigma-related outcomes, we evaluated whether the indirect effects were statistically significant (Preacher, 2015) with bias-corrected confidence intervals (Hayes & Scharkow, 2013) using bootstrapping procedures (2,000 bootstrap samples). The standard errors reported herein are those generated from the bootstrapping procedure. The unstandardized

⁴Some scholars (Anderson & Gerbing, 1998; Boomsma, 1982) recommend 150-200 as the minimum sample sizes for structural equation models. By including the measurement model, we have more free parameters to estimate than if we had used composite scores. We ran a path model with composite scores, which allowed us to estimate fewer free parameters and to meet the 10:1 recommendation for the ratio of sample size to free parameters (e.g., Kline, 2005); the model generated regression estimates virtually identical to what is presented herein.

In addition, to further test the causal model, we empirically compared reversing the causal order between the message induction, the message judgments, and danger appraisal (instead of our original order of message induction, danger appraisal, and then message judgments). We used the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) to compare the models. Differences in the AIC of more than 3 (Burnham & Anderson, 2002) and in the BIC of more than 6 (Kass & Raftery, 1995) suggest that the models are not equivalent, and the model with the smaller AIC and BIC is considered superior. The estimates for our original model are AIC = 1,956.21 and BIC = 2,246.47; the reversed model estimates are AIC = 2,021.46 and BIC = 2,315.01. The AIC difference is 65.25; the BIC difference is 68.54. Our original model produced the smaller AIC and BIC estimates. These empirical results suggest that our theorized causal order better fit our data.

indirect effect between message condition and regulation support was 0.92 ($SE = 0.07$, $p < .01$). The unstandardized indirect effect between message condition and stigma beliefs was 0.65 ($SE = 0.07$, $p < .01$). The unstandardized indirect effect between message condition and social distancing was 0.64 ($SE = 0.07$, $p < .01$). Thus, the results showed that danger appraisal served as a mediator between the stigma message condition and stigma-related outcomes.

We also investigated the judgments of shocking and common ground as mediators between danger appraisal and total sharing (transformed). The unstandardized indirect effect between danger appraisal and total sharing was 0.06 ($SE = 0.02$, $p < .01$); message judgments significantly mediated the relationship between danger appraisal and total sharing.

Exploring Sharing Patterns

Self-identified network position.—Almost every node in the sociogram was selected by at least one participant to represent him- or herself. The most popular nodes selected by the participants were *h* (12%), *i* (12%), and *j* (11 %); these nodes represent the highest values for closeness centrality (*h* and *i*) and popularity (*j*). Node selections did not differ by message condition, $\chi^2(17, N = 200) = 14.05$, *ns*. To test further for differences between conditions, the nodes were coded into three groups based on their relatively high (*b*, *d*, *f*, *g*, *h*, *i*, *j*), medium (*a*, *e*, *k*, *l*, *m*, *n*, *p*), or low (*c*, *o*, *q*, *r*, *s*) centrality based on a composite of normalized betweenness, closeness, and degree centrality; there were no differences by message condition, $\chi^2(2, N = 200) = 2.96$, *ns*.

Sharing patterns.—Most participants (88%) selected someone else in the network with whom they would share the health news story ($M = 3.26$, $Mdn = 2.00$, $SD = 4.24$, *Minimum* = 0, *Maximum* = 18). The most popular recipients of the story were *j* (37%), *h* (34%), and *d* (32%), followed by *i* (28%), *g* (19%), *f* (19%), *p* (16%), *k* (15%), *m* (15%), *n* (15%), *b* (14%), *q* (14%), *a* (14%), *e* (13%), *c* (12%), *l* (10%), *o* (10%), *s* (10%), and *r* (10%). (The percentages add up to more than 100% because some participants selected more than one recipient.) RQ1 asked which type of sharing pattern (more people, personal friends, well-connected members, or members with social reach) was most associated with messages judged as shocking and as having common ground. To explore RQ1, shocking and common ground were correlated with total sharing (transformed) and percentage of personal friends with whom the participant shared the message. In addition, two logistic regressions were conducted in which selecting one or two well-connected recipients (i.e., high eigenvector centrality) or selecting one or two recipients with social reach (i.e., high closeness centrality) was regressed onto shocking and common ground together. Of note, selecting a well-connected recipient was associated with selecting a recipient with social reach, $\chi^2(1, N = 200) = 4.28$, $p < .05$, Cramer's $V = .15$.

Total sharing (transformed) was correlated with judgments of the message as shocking, $r(198) = .25$, $p < .001$, and as having common ground, $r(198) = .25$, $p < .001$. Sharing the message with a greater percentage of personal friends was also correlated with judgments of the message as shocking, $r(198) = .14$, $p < .05$, and as having common ground, $r(198) = .21$, $p < .01$. The similar findings may be due to the association between the two types of sharing,

$r(198) = .66, p < .05$. The more shock value and the more common ground the message had, the more participants intended to share it more widely and with a greater percentage of their personal friends.

The logistic regression for selecting a well-connected recipient was statistically significant, $\chi^2(2, 197) = 11.67, p < .01$, Nagelkerke $R^2 = .08$. The parameter estimate for common ground as a predictor was statistically significant, *unstandardized* $b = 0.59, SE = 0.26, p < .05$, but the estimate for shocking as a predictor had a non-significant trend, *unstandardized* $b = 0.26, SE = 0.14, p = .06$.

The logistic regression for selecting a recipient with social reach was also statistically significant, $\chi^2(2, 197) = 14.27, p < .01$, Nagelkerke $R^2 = .09$. The parameter estimates for common ground and shocking as predictors were both statistically significant: *unstandardized* $b = 0.59, SE = 0.24, p < .05$, and shocking, *unstandardized* $b = 0.30, SE = 0.13, p < .05$, respectively. The results showed that messages judged as having more common ground were intended to be shared with the most well-connected network members. In addition, messages judged as having common ground and as shocking were intended to be shared with network members who had the greatest social reach.

Sharing Directives

H1 predicted that high (vs. low) stigma messages would be shared more often with a direct request for the recipient to pass it on to others. The direct request appeared in 30% of the open-ended responses from the high stigma-message condition but in only 15% of the open-ended responses from the low stigma-message condition. Examples of the direct request included literally writing “pass it on,” “share this with everyone you know,” or “spread the message.” H1 was supported, $\chi^2(1, N = 200) = 5.90, p < .05$, Cramer’s $V = .17$. In a post hoc analysis, the associations among the sharing directive and message judgments (shocking and common ground) as predictors were explored with a logistic regression. The logistic regression for including the pass-it-on directive was statistically significant, $\chi^2(2, 197) = 6.45, p < .05$, Nagelkerke $R^2 = .05$. The parameter estimate for shocking was statistically significant, *unstandardized* $b = 0.34, SE = 0.16, p < .05$, but the estimate for common ground was not, *unstandardized* $b = 0.23, SE = 0.28, p = .42$.

Discussion

Health threats, such as outbreaks of infectious diseases, will continue to occur, and agencies need guidance on how to communicate with the public in ways that alert them to health threats without inducing stigmatization. In this study, we presented a revised model of stigma message effects in which exposure to health news stories with the intrinsic features of stigma messages lead to stigma beliefs and stigmatization as a result of a person-oriented danger appraisal. In addition, judgments of the message—its shock value and common ground—were introduced from research on rumor, sharing, and gossip (Berger, 2014; Cappella et al., 2014; Dunbar, 2004; Rosnow, 1991) as a second appraisal that mediated the relationship between danger appraisal and social transmission of the stigma message to others in the social network.

Empirical Support and Theoretical Implications

The results provide support for our model. After reading a health news story written with (vs. without) the intrinsic features of stigma messages, participants had greater danger appraisal: They considered infected people to be more dangerous and participants felt more threatened by them. Greater danger appraisal, in turn, predicted stronger stigma beliefs, stronger support for regulation of infected people's lives, and stronger intentions to create social distance. In addition, greater danger appraisal predicted judging the message as more shocking and as having more common ground; these message judgments, in turn, predicted intentions to share the message with more members of a participant's friendship network.

Anticipating Social Diffusion

Although scholars acknowledge that social facts or collective norms can emerge from interactions among community members, no attention has been paid to interpersonal communication's role in shaping these norms and social facts (Rimal & Lapinski, 2015). We explored patterns of social transmission and direct requests made by sharers (participants) for the recipient to pass the health news story to others as mechanisms by which personal communication may shape the emergence and persistence of health stigmas as collective norms.

Shocking messages.—Our results provided compelling support for the idea that stigma messages are judged to be shocking (a combination of surprise and extremity; Berger, 2014). Indeed, the correlation between the message condition and perceiving the message as shocking was .55. The results also showed that shocking messages were shared more often, with more network members, a greater percent of personal friends, members with the greatest social reach (who can reach everyone else through the least number of intermediaries), and more frequently with a direct request for the recipient to reshare it. By being shocking, the stigma message has the greatest chance of spreading quickly to everyone in the social network through interpersonal communication. These processes increase the likelihood of a network member being exposed to a stigma message and the rate at which the entire social system is so exposed. Judging a message to be shocking, then, leads to patterns of sharing that may facilitate the development of a stigma as a descriptive norm as more people react similarly to stigmatized people. Descriptive norms and the shock value of messages both function to generate positive impressions on others, which has been associated with both sharing shocking messages (Berger, 2014) and being influenced by descriptive norms (Cialdini & Goldstein, 2004).

Common ground.—There was less evidence that high (vs. low) stigma messages are judged as having more common ground, which was supposed to represent a correlate of social bonding (Berger, 2014; Dunbar, 2004). The correlation between the message condition (high vs. low stigma) and perceiving the message as having common ground was .15. One reason for this low correlation may be a ceiling effect: The average judgment of common ground across message conditions was 4.25 on a 5-point scale. The overall assessment of the health news story as having common ground may be because infectious diseases threaten the whole community.

Although the high (vs. low) stigma message was not judged as having much more common ground, messages judged as having more common ground were shared in a pattern that may promote injunctive norms. Messages having more common ground were shared with more network members, a greater percentage of personal friends, and with members who had the highest eigenvector centrality. This form of centrality, being connected to the well-connected, is closely related to types of influence proposed by L. Katz (1953), Hubbell (1965), and Coleman, Katz, and Menzel (1966), among others. Injunctive norms are associated with affiliation (Cialdini & Goldstein, 2004): People do what important and powerful others endorse to gain social approval from and to deepen personal bonds with these influential others (Cialdini & Goldstein, 2004; Deutsch & Gerard, 1955). As noted in rumor, gossip, and sharing research, sharing messages with others can facilitate social relationships (Dunbar, 2004) by reinforcing shared views and ingroup inclusion (Berger, 2014). Social bonding, then, should motivate people to share messages about common interests (i.e., common ground; Berger, 2014). This study showed that common ground messages are shared, and shared with those with whom one may want to strengthen personal bonds—personal friends—and with those in the best network position to reinforce shared views and ingroup inclusion: those with the highest eigenvector centrality. Other social network characteristics, such as density and reciprocity (e.g., Rice, 1994; Valente, 1995), have been associated with opinion leaders' roles in the diffusion process and may be useful to consider in future studies of strategic sharing.

Thus, although stigmatization may become descriptively normative through contagion-like sharing because of a stigma message's shock value, the stigma may become an injunctive norm (Cialdini & Goldstein, 2004) through the sharing of common ground messages to influential agents and close network members. By evoking shock and common ground, stigma messages may stimulate interpersonal communication patterns that lead to descriptive and injunctive norms, which together make stigmas a collective norm. Injunctive norms need to be salient to have an effect (Cialdini & Goldstein, 2004; Rimal & Lapinski, 2015), and descriptive norms may make them salient.

Limitations

The findings here are limited by the design, the sociogram, and the sample. The design included a fictitious sociogram to instantiate the social context in which sharing would occur. The structural approach afforded through network analysis is consistent with how networks have been considered in diffusion research since the 1970s. For example, Granovetter (1973) argued that people's position within a network shapes their ability to diffuse information to others as well as their ability to learn new information from other people. The rationale for our design was based on the benefits of experimental control and the belief that people apply their expectations for social interactions to novel and hypothetical situations (Fink et al., 2003; Heider, 1958; Kelley, 1992; Smith & Fink, 2015). Reviews show strong correlations between social processes studied in hypothetical scenarios and in nonhypothetical situations; of course, the level of behavior sometimes varies between them (Eastwick, Hunt, & Neff, 2013). Sociograms provide an efficient and effective way to depict social relations, which is supported by early work in perceptual sociometry (e.g., Moreno, 1934) as well as by recent studies (e.g., Huang et al., 2005; Igarashi & Kashima,

2011; Smith & Fink, 2015). Furthermore, we measured the realism of our sociogram, and the participants perceived the sociogram as a plausible representation of social relationships. Although participants self-identified with a network position and selected their own influence targets, the sociogram has a particular structure, size (19 people), and premise (mutual friendships). The network size and interpersonal connections represented in our sociogram match the social brain hypothesis, which argues that there is a cognitive limit to the size of social groups. Humans layer friends into groups of 5, 15, 50, 150, 500, and 1,500 with emotional closeness decreasing as the group size increases; these groupings have been found in data collected through self-reports, phone calls (e.g., MacCarron et al., 2016), and social media sites (Dunbar, Arnaboldi, Conti, & Passarella, 2015), and our sociogram best matches close friendships. Last, Kim (2015) reported that health news stories, on average, were emailed to other people about 208 times, indicating that some people may email health news to more than 18 people. Therefore, our study should be replicated with networks varying in structural pattern, size, and premise.

Conclusion

The critique of media coverage as creating health stigmas suggests that news stories may result in devaluing and discriminating against those affected by a health condition. Although the interpersonal spread of media messages has often focused on identifying people who spread or shape social beliefs, this study provides insights into messages that people share and with whom, focusing on recipients' strategic positions in a social network based on social power or reach rather than their social category (e.g., friends vs. relatives). This research complements the growing literature on message judgments and sharing disparities (Southwell, 2013). The study of stigma messages and the networks in which they diffuse tells us more than the game of telephone, which most of us learned as children, whose purpose was to inform us about the inaccuracies and speed by which messages are promulgated. Our study provides insight into the appeal of shocking urban legends and forecasts the challenges in eradicating them.

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Figure 1.

Conceptual model of stigma message effects (adapted from the MSC, Smith, 2007), in which stigma messages result in stigma attitudes and actions through danger appraisal and in social transmission via danger appraisal and message judgments.

Figure 2. Sociogram of hypothetical social relations based on friendships. The network members labeled *d* and *g* are the highest in eigenvector centrality (i.e., connected to well-connected members); *h* and *i* are the highest in closeness centrality (i.e., able to reach everyone else through the fewest intermediaries).

Figure 3:

Results for the hypothesized model: $\chi^2(732, N=200) = 1,780.21, p < .05$. The stigma message variable was effect coded, 1 = high stigma condition, and -1 = low stigma condition. Latent variables are shown with ellipses. The individual items are not shown in the figure but were included in the structural equation model. The structural equation model was estimated with maximum likelihood; neither the errors of prediction nor the errors of measurement were allowed to covary. The parameters were estimated using bootstrapping procedures (2,000 bootstrap samples) and bias-corrected confidence intervals (Hayes & Scharkow, 2013). Parameters shown on the paths are standardized regression weights; all parameters were significant at $p < .05$ with both the maximum likelihood and bootstrapping procedures.

Table 1

Example Health News Story

There is an emergent disease in the United States that is caused by an infection with a new strain of the <i>Maculo</i> virus. <i>Maculo</i> viruses are <u>spread</u> by human contact. The virus is transmitted when blood from an infected person makes contact with an open wound, even a small scratch, on a <u>healthy person</u> [spread by mosquitos. An infected mosquito transmits the virus to people as it bites them, <i>Etiology</i>]. It <u>can take just one exposure to become infected</u> [usually takes multiple exposures to become infected, <i>Peril</i>].   Early on, those infected with the <i>Maculo</i> virus [victims of the <i>Maculo</i> virus, <i>Label</i>] will have a fever. As the disease progresses, symptoms include <u>open, weeping sores, typically on the arms</u> [or headaches; <i>Marks</i>]. There is no specific treatment for <u>infected patients</u> [people living with the virus, <i>Label</i>]. An infection with the <i>Maculo</i> virus is <u>often fatal, causes great muscle pain as well as neurological symptoms, such as hallucinations and aggression</u> [is rarely fatal, and causes temporary, mild discomfort with no neurological symptoms; <i>Peril</i>].   Scientists are working to reduce the impact of this new form of <i>Maculo</i> virus, which is spreading rapidly into the United States. The Center for Disease Control and Prevention (CDC) recommends that healthy people should cover their skin to avoid infection. Those experiencing symptoms are encouraged to seek treatment. Federal health agencies are working to advance diagnostic testing, improve patient care, and develop vaccines.

Notes. This health news story was presented in the high stigma-message condition. Alternative text appears in brackets, with the variable in italics.

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Correlations among the Variables in the Theoretical Model: Stigma Message Condition, Psychological Reactions, Message Judgments, and Message Sharing

Table 2

	M	SD	1	2	3	4	5	6	7	8	9
1. Stigma message	-0.01	-1.00	--								
2. Dangerous	2.93	3.08	.69**	--							
3. Threatened	3.73	3.00	.60**	.78**	--						
4. Shocking	3.00	3.00	.55**	.57**	.54**	--					
5. Common ground	4.25	4.25	.15*	.11	.23**	.18**	--				
6. Total sharing ^a	1.51	1.41	.24**	.14	.23**	.25**	.25**	--			
7. Regulation support	3.43	3.50	.62**	.77**	.70**	.53**	.23**	.24**	--		
8. Stigma beliefs	2.72	2.82	.63**	.74**	.60**	.44**	.08	.13	.60**	--	
9. Social distancing	3.79	4.00	.47**	.70**	.63**	.41**	.18*	.20**	.75**	.55**	--
10. Resharing directive	-0.54	-1.00	.17*	.11	.09	.17*	.09	.06	.16*	.13	.09

Note. The stigma message was coded 1 = high, -1 = low. The resharing directive was coded 1 = present, -1 = absent. Total sharing, marked with the superscript *a*, was transformed before it was used in this analysis.

* $p < .05$.

** $p < .01$.