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The Impact of Retransmission and Modality on Communicating Health Research Findings via Social Media

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ABSTRACT

Social media is an increasingly popular tool for disseminating health research findings to members of the general public and may contribute to improving the effectiveness of science communication. This study was designed to investigate how retransmission (i.e., social media content shared by a familiar, credible organization) and modality (i.e., how the message is delivered) influence the effectiveness of communicating health research findings via social media. The findings from a 2 (source) X 3 (modality) X 2 (topic) mixed factorial design experiment (N = 517) indicated that source had a significant effect, such that posts that were retransmitted by a credible organization resulted in greater perceived source credibility, greater perceived message effectiveness, and greater likelihood of an individual to engage with the post on Facebook. Modality significantly increased perceived source credibility and perceived message effectiveness when posts were retransmitted by a credible source, indicating that modality made a difference when messages were elaborated as a function of the retransmission. Also, the topic of the post had a significant impact on the study's dependent variables of interest. Overall, the findings illustrate the potential of retransmission and modality as message features that can improve communication of health research findings on social media. Theoretical and practical implications are discussed.

Introduction

Communicating scientific research and its findings to the public is important as it can influence individuals' knowledge, behaviors, and daily decisions (Akin & Scheufele, 2017). Additionally, successful dissemination of research findings can contribute to better funding for future research and influence social, political, and economic outcomes (Marín-González et al., 2017). Despite the benefits of communicating findings, however, scientific research does not always make it to the general public, creating a problematic gap between scientists and the community (Marín-González et al., 2017). It has long been discussed that communicating about science is not easy, with several contributing factors (National Academies of Sciences, Engineering and Medicine, 2017). For example, the general public typically lacks access to academic journals where findings are published and conferences where findings are presented (Breland, Quintiliani, Schneider, May & Pagoto; 2017; Schnitzler et al., 2016). Further, the complex nature of scientific research has contributed to prolonged struggles with public engagement in science and effective large-scale communication as it can be difficult for laypeople to understand and interpret scientific information they encounter (Akin & Scheufele, 2017). When information is not fully understood, the value and relevance may not be realized, and a lack of interest can ensue.

Additionally, new challenges and opportunities have emerged with a changing communication landscape. Scientific research was once primarily publicized through traditional mass media formats such as television and newspapers (Nisbet et al., 2002), but new media (e.g., blogs and social media) has fundamentally altered how information is shared with the public (Akin & Scheufele, 2017). This broadening of communication channels has led to more science communicators trying to reach the public directly, especially through social media (National Academies of Sciences, Engineering and Medicine, 2017). While social media users only comprise a portion of the public (70% of Americans in 2018, according to the Pew Research Center), social media has become a mainstream global communication tool (Schnitzler et al., 2016). And, as social media has been considered a potentially viable means for reaching individuals less involved in traditional mass media, empirical investigation has been considered "crucial" (National Academies of Sciences, Engineering and Medicine, 2017, p. 75).

In health, social media has been increasingly used to communicate (Schnitzler et al., 2016), and the free and accessible nature of social media has the potential to allow researchers and health and science communicators to easily and affordably expand the readership of their findings, while also having the potential to benefit the field of public health through changing behaviors, public discourse, and health policy (Breland et al., 2017). This study was designed to investigate the use of social media as a tool for disseminating health research findings to the segment of the public who partakes in social networking. The study positions social media as a partial solution to the larger, enduring issue of wide-reaching dissemination of health research findings. Specifically, this study entails an experiment designed to better understand the effects of retransmission and

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varying modalities as social media message features that may be useful in overcoming communication issues. Retransmission refers to the re-posting (i.e., sharing) of content that was originally posted on social media, while modality refers to the form in which the content is delivered (e.g., content delivered in the form of a video, infographic, or photo with text). The study hypothesizes that when original social media content is retransmitted by a well-known, credible organization, that content will be more persuasive. While it may be difficult for health researchers to convince larger, credible organizations to retransmit their content on social media, this study serves as a starting point to see the potential value in increasing retransmission. Further, this study considers the role of the modality in influencing message processing and persuasiveness by examining which of the modalities commonly used on social media (e.g., videos, infographics, or text with a photo) is most effective.

Information processing of scientific research findings

The complexity of scientific information has been found to influence the processing of science information, such that audiences who encounter complex content are more likely to rely on cognitive shortcuts (i.e., peripheral cues) to process the information (Akin & Scheufele, 2017). These cognitive shortcuts provide mental shortcuts for evaluating the content, ultimately allowing the individuals to more quickly evaluate the scientific information and form their perception of the content. According to the Elaboration Likelihood Model (ELM), there are two routes to information processing – central and peripheral – and the route that is taken is dependent on individual and situational factors. For instance, the ELM states that when one's motivation or ability to process the content is low, peripheral cues become vastly important determinants of one's processing and of the persuasive effects of the content (Petty & Cacioppo, 1986). Because a lack of interest and understanding are primary contributors to the issue of communicating scientific information, it is not surprising that peripheral cues have been found to play an important role in the processing of science information.

While many factors can serve as peripheral cues, one such cue that may commonly influence processing of health research information on social media is the source of information (i.e., an individual or organization) who has communicated the content on the social networking platform. A large body of research has shown sources are important to message perception (Hovland & Weiss, 1951), and further, research in information processing has illustrated sources can serve as peripheral cues and even elicit more in-depth processing – as source characteristics like credibility and likability lead one to become more motivated to pay attention to the message (Xu, 2017). Jones et al. (2003) provided empirical support of this in an experiment investigating the effects of information source and message framing on the processing of physical exercise promotion pamphlets. They found a credible (vs. non-credible) source increased overall message elaboration, which then caused other message factors (the framing) to have effects. When a non-credible source was used, messages were not elaborated, and other message characteristics did not have an influence. Based on these findings and the ELM, this study suggests that the communication source of health research findings on social media will serve as a peripheral cue, influencing message elaboration. Specifically, this study suggests the use of a "retransmitter" source to increase motivation for message elaboration.

Retransmission

One advantage of social media is the ability to directly engage with content. For example, Facebook users can show appreciation for a post by "liking" it, can comment their thoughts on another post, and can "share" the content so it is seen by others. Previous literature has referred to this re-sharing of information as "retransmission" (e.g., Kim et al., 2013; Luarn et al., 2014; Sutton et al., 2015), such that, in the sphere of social media, information can be disseminated to others through either transmission or retransmission. In the case of transmission, a "transmitter" posts information that is new to the network. This information is likely generated directly by the transmitter, but can also include bringing information from another source (e.g., a website) to the social media network. When information that has been transmitted is shared by another (e.g., an individual or organization), retransmission has occurred. In other words, retransmission is ultimately the reposting (i.e., sharing) of information already on the network. The individual or organization sharing the information is the "retransmitter." Both retransmission and transmission are forms of dissemination, as each process involves communication of information to others (Sutton et al., 2015). Thus, in this study, dissemination refers to the communication of health research findings to others via social media, and within dissemination, "transmission" is the original posting of content on social media, and "retransmission" refers to a source re-sharing the original content.

While retransmission can improve dissemination as a function of further spreading health research and growing the audience exponentially (Breland et al., 2017; Strekalova, 2017), this study theorizes how retransmission can improve the dissemination of scientific research findings as a function of influencing users' information processing. Based on the ELM, heuristic processing can occur as a function of mere exposure to contextual, consensus cues (Petty & Cacioppo, 1986), in which the Facebook user gives more validity to the content because others have engaged with it. In other words, consensus cues such as *likes* or *shares* of a social media post can signal the significance of the information for other users (Strekalova, 2017; Sun et al., 2014). To investigate such phenomenon, Sundar (2008) suggested the MAIN model, which theorizes that individuals rely on peripheral factors (i.e., heuristics) – such as the likes, comments, and shares social media content has received – to assess the credibility of the content. In essence, these peripheral factors can indicate the popularity of previous users and thus create a "bandwagon" effect in which people are likely to accept information when they believe others have done so (Sundar, 2008). And, varying elements, such as the quality (i.e., whether the content has been liked or shared) and the quantity (i.e., how many people or organizations have liked or shared the content) of the peripheral cues, can affect credibility evaluations and message perceptions. For instance, because people tend to perceive information they have encountered multiple times as being

more important or truer than information they have not encountered often (Fazio et al., 2015), seeing that the information has been shared multiple times can serve as a peripheral cue. While factors such as the quantity and quality of the peripheral cues are important considerations, this study focuses specifically on either the lack or presence of retransmission (i.e.,whether the content is shared or not) to focus on illustrating the effects of retransmission for health findings disseminated on social media.

Information source,source credibility,and message effectiveness

When examining retransmitted content on social media,there are two sources at play: the source that originally posted the content (i.e.,the transmitter) and the source that is sharing the content beyond the original source (i.e.,the retransmitter). The credibility of both of these sources is important,as people generally tend to rely on sources they trust,internalizing information from reliable sources and rejecting information from sources they consider unreliable" (Malka et al.,2009,p. 635). Further,source considerations are especially important to the context of science communication,as both levels of trust and credibility have been found to affect the degree to which people pay attention to scientific experts and whether or not they believe scientific findings (National Academies of Sciences,Engineering and Medicine,2017). When a source is perceived to be credible,audiences' attentional resources for processing content tend to increase,such that highly credible sources increase message elaboration and persuasion (Dong,2015; Eagly et al.,1978; Wilson & Sherrell,1993). Thus,if a source that has shared a social media post is perceived as credible and well-liked,there is a greater likelihood for acceptance of the information,and thus,a greater likelihood for perceived message effectiveness (Chaiken & Maheswaran,1994; Sundar,2008). Therefore,it was hypothesized that:

H1:Health research communication retransmitted by a well-known, credible source will result in higher **a)** perceived source credibility and **b)** perceived message effectiveness.

Information source and behavioral intentions

Individuals tend to be persuaded by messages they perceive to be effective and of high quality (Dillard & Ye, 2008). Thus, as sources high in credibility are likely to increase message elaboration and persuasion, (Dong, 2015; Eagly et al., 1978; Wilson & Sherrell, 1993), this study suggests retransmitted information should be more effective at persuading behavior change compared to transmitted information:

H2: Health research communication retransmitted by a well-known, credible source will result in stronger health behavioral intentions (related to the recommendation given from the study's findings).

As a result of the positive message perception (i.e., high perceived source credibility and perceived message effectiveness) from retransmission, retransmitted health research may also increase intentions to engage (i.e., "like" and "share") with the content on social media, as trust in information has been found to play a significant role in increasing engagement with social media content (Farook & Abeysekera, 2016). Thus, hypothesis three predicted:

H3: Health research communication retransmitted by a well-known, credible source will result in stronger intentions to engage with the Facebook content.

Modalities of communication

When posting to social media, health organizations and institutions can decide how to post their content. Thus, in addition to source influencing the processing and effectiveness of health research findings disseminated on social media, there is also a likelihood that the modality will influence how the content is processed, and more specifically, can improve central (i.e., systematic) processing when an individual has chosen to elaborate the message. When defining "modality" as "how messages are delivered or presented via a medium" (Bracken & Dalessandro, 2017, p. 2), this could include modes such as video, infographics, or textual information. Previous empirical evidence supports that modalities influence how content is processed (Bracken & Dalessandro, 2017). Importantly, videos and infographics are suggested to be helpful tools for improving communication of health information as such forms of communication can assist in reaching a large public audience and influencing public perceptions of how health information affects health and policies (Marín-González et al., 2017). Findings from previous studies support that videos in health contexts can be very effective. For example, videos have been found to be visually appealing and instrumental in illustrating different concepts and processes (Huang, 2009), and implementation of videos has increased patient knowledge and comprehension (Ferguson, 2012), developed trust (Huang, 2009), and promoted healthier behaviors (Armstrong et al., 2011).

This study employs dual-coding theory to explore how different modalities of health information (specifically videos, infographics, and text+photo) on social media influence message processing and persuasion, including perceived message effectiveness, perceived source credibility, health behavioral intentions, and intentions to engage with the social media content. According to dual-coding theory, people have two different cognitive systems that work together to facilitate information processing: one specializing in processing visual information and one specializing in processing verbal information. While visual and verbal content are processed through different systems within the mind, associations can be formed between visual and verbal content, such that when a message is coded in two different ways (visually and verbally), there is an increased chance of the message being remembered. By placing relevant visual and verbal information together, there is increased likelihood for recall (Glaser, 1990). Some findings suggest that if textual information is presented in conjunction with a visual representation, cognitive load may be reduced – making it easier to learn, process, and remember the content than if it was presented through text alone (Cook, 2006; Dunlap & Lowenthal, 2016). This could be especially useful in the context of health research communication on social media as people are interested in information but are also inundated when scrolling through their social media.

Thus, based on dual-coding theory, video and infographics that combine two different modalities may be potentially effective tools for communicating information. Infographics are visual representations of information with the intent to present complex information in a clearer, more concise way (Marín-González et al., 2017; Otten et al., 2015). By combining visuals with written content, infographics can allow for easier, quicker digestion of complex information (Otten et al., 2015). Similarly, the type of videos commonly used on social media today may have a similar dual-coding effect, as many videos currently used on social media use images and background video while captioning (i.e., text overlay) communicates the message for the audience to read. In many cases, the videos do not have any sound, as many people use social media in public and may not have the ability to listen to audio when surrounded by others (Patel, 2016). As visuals are combined with text, both cognitive subsystems described by dual-coding theory are at work as viewers use both verbal and visual processing to understand the message.

Importantly, when information is presented in more than one modality, redundancy between channels (or modalities), defined as information that is shared between words and pictures (i.e., auditory and verbal channels), can facilitate information processing (Hsia, 1977; Reese, 1984). The more redundant, the easier it is to be processed (Lang, 1995). For example, Drew and Grimes (1987) reported that college students' understanding of news was higher when the level of redundancy between the auditory and visual elements of news videos was higher. Reese (1984) also found evidence that redundancy in pictorial and audio channels can be beneficial for learning in an experiment that manipulated redundancy between pictorial and verbal channels in news videos. For the undergraduate students in the study, recall was better (reduced errors) when the pictorial and audio channels were redundant. Because prior research suggests that if there is an optimal amount of redundancy, information association should be facilitated, making information processing easier (Hsia, 1977), this study hypothesizes that the combined use of textual captions and related visuals will produce the effect of visual-verbal redundancy, making it easier to process the information. Additionally, the rate at which information is presented may have effects on information processing. While infographics or health information presented as text+photo present all of the information at once, social media videos that communicate with captions gradually present the information to the message receiver, requiring the viewer to read the information piece-by-piece. Because human beings have limited capacities for information processing (Lang, 2000, 2006), the gradual presentation of information via these types of videos may be less cognitively taxing. And, the gradual presentation of information in combination with the redundant use of visuals that match the video text may make videos a more effective mode of communication.

Because there is limited modality research and because the types of videos used on social media differ from traditional video forms commonly investigated, this study explored the effects of social media modalities to see how videos, infographics, and text+photo varied in effectiveness for sharing health research findings. This study asked:

RQ1: How will modality affect **a)** perceived source credibility, **b)** perceived message effectiveness, **c)** health behavioral intentions, and **d)** intentions to engage with the content on Facebook?

Health topics

Much research in health communication literature explores message effects in the context of particular health topics (Suran et al., 2014), since the effects of messages may differ as a function of the topic due to audience perception (e.g., relevance and risk perception) varying as a function of the topics addressed in the messages. Thus, it is of particular interest to examine how two different health topics have an impact on the outcome variables of interest in this study and how the topics interact with the modalities.

Theories and prior literature support that a topic's perceived relevance can influence information processing by means of affecting attention and audience perception, with messages perceived to be relevant being more likely (compared to messages with low perceived relevance) to elicit increased allocation of attentional resources to processing the messages (Lang, 2000, 2006; Petty & Cacioppo, 1986). Message relevance influences message processing by increasing audience involvement with the message. This increases the likelihood for message elaboration, and, in turn, greater likelihood for attitude and behavior change (Anghelcev & Sar, 2011; Petty & Cacioppo, 1986). Relatedly, the perceived threat level of health message topics can also influence information processing of a message. For instance, messages addressing health topics that are perceived as having greater health threats may increase the likelihood of message elaboration more than health messages with a low perceived threat (Witte, 1992). In particular, the extended parallel process model (EPPM) asserts that individuals first assess the threat of the issue discussed in the message, and if they deem they are susceptible to the threat, they then assess the efficacy of the recommended response (i.e., health behavior) for the threat as a function of helping them to avoid the risk (Witte & Allen, 2000). If the threat communicated in the message is considered to be irrelevant or insignificant (i.e., low threat perception), the individual will lack motivation to process the message any further. A prior meta-analysis of public health campaigns revealed that health messages with greater severity and susceptibility (two dimensions of perceived threat) result in greater attitude, intention, and behavior changes, which supports that health messages that produce high levels of perceived threat are more persuasive than messages that produce low threat perceptions (Witte & Allen, 2000).

In addition to health topics having an effect as a result of the feelings of relevance and threat that are evoked, health topics and their associated behaviors also differ in nature. For example, when health messaging advocates for behavior change, the behavior that is being encouraged can be classified as either an ongoing type of behavior or an episodic type of behavior (Wakefield et al., 2010). While an ongoing behavior requires an individual to keep up with a habitual activity (e.g., frequent exercise or a healthy eating lifestyle), an episodic behavior only has to be done once or occasionally (e.g., vaccination or disease screening). While health campaigns can influence health behavior change for both ongoing and episodic health behaviors, in a review of the effectiveness of mass media campaigns including multiple health topics, it was found that the likelihood for

successful behavior change is much greater when the behavior is episodic rather than ongoing (Wakefield et al., 2010). Thus, the very nature of what the behavior requires can affect health communication efforts.

The two health topics included in this study, locked cabinets as a means for safe opioid storage and yoga as a means for preventing prediabetes, are likely to differ in the ways discussed above. Individuals' perceived relevance and perceived threat of opioid storage and prediabetes will likely differ as a function of one's personal experiences, health characteristics, and involvement with the topics. While practicing yoga to decrease one's likelihood of developing prediabetes would require ongoing action, adding a locked cabinet for safe opioid storage would be a one-time behavior that would require less effort long-term. Further, while a wide range of media coverage has treated yoga as a remedy to reduce stress, media has positioned opioid overdose as an urgent health risk, which could also influence how audiences perceive and process messages covering these topics. Due to the potential for varying health topic characteristics (i.e., perceived relevance, perceived threat, and behavior type) to influence message perceptions, this study asks the following research question to investigate how the health topics themselves may also play a role in information processing:

R**Q2**: How will the health topic affect **a)** perceived source credibility, **b)** perceived message effectiveness, **c)** health behavioral intentions, and **d)** intentions to engage with the content on Facebook?

In addition to the health topics having main effects, there is also a possibility that the health topic and modality will interact. For example, if the health topic serves as a peripheral cue to elaborate the information, modality may be more likely to have an effect. Thus, to see if there is an interaction effect between the two, the following research question was proposed:

RQ3: How will modality and health topic interact to affect **a)** perceived source credibility, **b)** perceived message effectiveness, **c)** health behavioral intentions, and **d)** intentions to engage with the content on Facebook?

Method

Experimental design and stimuli

This study employed an online experiment with a 2 (source) X 3 (type of modality) X 2 (topic) mixed factorial design in which source was a within-subjects factor and modality and topic were between-subjects factors. The source and modality manipulations were fully crossed across each topic, such that 12 total Facebook posts were created to be used as stimuli (2 sources X 3 modalities X 2 health topics). The original experimental stimuli were Facebook posts, covering recent research findings of two different health topics. Facebook was chosen because it is the most widely used social media in the United States (Pew Research Center, 2018).

Two different topics were chosen for the stimuli. The topics are examples of university medical research studies that have wide practical applicability. Then, for each of the two topics, six versions (3 modalities X 2 sources) of the Facebook post were created to include each of the three modalities (video, infographic, and photo/text) and each of the two source types (transmitter and retransmitter). Source manipulation was done by producing half of the stimuli to appear as though it was posted (i.e., transmitted) by the health research institution who had conducted the research. The other half of the stimuli involved the original post from the health research institution (i.e., the transmitter), but in this case, it had been shared (i.e., retransmitted) by another well-known and trusted organization (i.e., the retransmitter). Thus, participants saw the original source of the content as well as the source that shared the post. Each participant saw one retransmitted post and one transmitted post, and in doing so, were shown one post from each of the two health topics. The two posts they saw differed in modality, such that a participant saw two of the three different modalities being examined. The presentation and order of the stimuli were fully randomized. Samples of the experimental stimuli can be found in the Appendix.

Independent variables

Source: Transmission vs. retransmission

Source was defined as the organization that was disseminating the Facebook post to their followers via their Facebook profile. Source included two levels: transmitter vs. retransmitter. As mentioned previously, transmission and retransmission both serve as forms of dissemination as each case involves the sending of information to others (Sutton et al., 2015). In the case of the transmitter source, the Facebook post came from a fictionalized state health research institution (MCTH) that was local for the participant sample. MCTH had conducted the study and was sharing its findings. In the case of the retransmitter source, the original post from MCTH was shared by the well-known nonprofit academic medical center, that is, the Mayo Clinic. Prior to the main experiment, a pretest was conducted to select an organization that was perceived by the target audience as a well-recognized, well-trusted health institution. In the pretest, a total of 102 participants recruited through Mturk indicated how familiar they were with eight national health institutions (*1 = very unfamiliar, 7 = very familiar)* and how much they trusted each of the eight institutions (*1 = not at all, 7 = very much)*. Of the eight institutions, the Mayo Clinic received the highest rating of trust ($M = 5.57$) and a high rating of familiarity ($M = 5.23$).

Modality

Modality was defined as the way in which the messages were delivered via the social media platform. This included three levels: video, infographic, or text combined with a photo (text + photo). The videos in the experiment represent videos typical of those used in present-day social media such that they entailed 45-seconds of images and textual captions communicating the health research study and findings. Audio was not included, as it is common for short videos on social media to not include audio. The infographics were visual representations of the research study and findings that combined visual imagery and text. Lastly, the text + photo modality involved textual explanation of the study and findings, while also providing a generic photo related to the health research study. The number of

details, study design, and study findings were consistent across the modality types for each of the health topics.

Health topic

Two different studies were used as topics of health research for the stimuli. The first topic was about safely storing opioids, in which study findings discussed the number of unsafely stored opioids in homes with children and the harm of unsafe storage. The second health topic was about doing yoga to prevent prediabetes, in which study findings discussed how yoga can be beneficial by reducing things such as BMI and fasting blood pressure.

Dependent variables

Perceived message effectiveness

Perceived message effectiveness of each Facebook post was measured with a 5-point semantic differential scale of eight items (Dillard & Ye, 2008). Participants indicated how much they agreed that the Facebook post was: persuasive, effective, convincing, compelling, reasonable, logical, rational, true to life (*1 = strongly disagree, 5 = strongly agree*). Reliability (Cronbach's α) was.958 (transmitter) and.960 (retransmitter).

Perceived source credibility

Perceived source credibility was measured with McCroskey and Teven's credibility scale (McCroskey & Teven, 1999), which includes 18 semantic differential items, covering the dimensions of competence, goodwill, and trustworthiness. Participants rated the sources of information on 7-point scales of the 18 semantic differential items. All scale items were used. Reliability (Cronbach's α) was .939 (transmitter) and .950 (retransmitter).

Health behavioral intention

Health behavioral intention was defined as the likelihood of a participant to follow the recommendation given by health research findings. One item was used for each of the two health topics, such that participants answered, "In the next three months, how likely is it that you will safely store any opioids in your home?" (*1 = very unlikely, 5 = very likely, N/A = I already do XXX.*) and, "In the next three months, how likely is it that you will do yoga for potential health benefits?" (*1 = very unlikely, 5 = very likely, N/A = I already do XXX*).

Social media behavioral intentions

Intentions to engage with each post was measured with a 5-point semantic differential scale in which participants answered three questions: (1) How likely is it that you would "like" this post if you saw it on Facebook? (2) How likely is it that you would "share" this post if you saw it on Facebook? (3) How likely is it that you would "like" the Facebook page that posted this post if you saw it on Facebook? (1 = very unlikely, 5 = very likely). Reliability (Cronbach's α) was .940 (transmitter) and .937 (retransmitter).

Participants

A total of 517 individuals residing in two Midwestern states completed the online experiment and were compensated via a Qualtrics panel. After giving informed consent, they viewed two experimental stimuli and responded to the questions measuring dependent variables after each of the stimuli. Participant age ranged from 18 to 84 (M = 47.08, SD = 17.06), and there were slightly more females (n = 268, 52%) than males (n = 245, 47%). Four (1%) participants did not identify their gender. Table 1 shows further participant demographics.[1]

Data analysis

A series of 2 (source) X 6 (condition) repeated-measures ANOVAs were performed to explore the source effect (transmitter vs. retransmitter) on the outcome variables. Further, 2 (health topic) x 3 (modality) ANOVAs were performed (for the transmission and retransmission source conditions, respectively) to test the effects of the health topic and modality.

Results

Effects of retransmission

Perceived source credibility and message effectiveness

Hypothesis 1 predicted the retransmitted health research communication would result in higher a) perceived source credibility and b) perceived message effectiveness. Both hypothesis 1a and 1b were supported as the main effect on perceived source credibility was statistically significant, $F(1, 511) = 11.75$, $p < .001$, and the main effect on perceived message effectiveness was statistically significant, $F(1, 511) = 5.12$ $p = .023$. As predicted, perceived source credibility was greater for the retransmitted posts (M = 5.48, SD = 1.07), compared to the posts that had not been retransmitted (M = 5.35, SD = 1.10). Predictions were also met for perceived message effectiveness. Retransmitted posts (M = 4.09, SD = .29) were perceived as more effective than transmitted posts (M = 4.01, SD = .87).

Health behavior intention

Hypothesis 2 predicted retransmitted health research would result in stronger health behavior intentions. This was not supported; the main effect of the source on health behavior intention was not statistically significant, $F(1, 511) = .64$, $p > .05$.

Table 1. Demographics of Sample.

	n	Percentage
Race		
White/Caucasian	431	83.2
Black/African American	60	11.3
Asian	14	2.7
American Indian or Alaska Native	3	0.6
Native Hawaiian/Pacific Islander	2	0.4
Other	7	1.4
Ethnicity		
Not Spanish, Hispanic, or Latino	493	95.4
Mexican, Mexican American or Chicano	6	1.2
Puerto Rican	0	0
Cuban	2	0.4
Other Spanish, Hispanic, or Latino	7	1.4
Prefer not to answer	9	1.7
Facebook Use		
Several times a day	262	50.7
Once a day	76	14.7
4-6 days a week	19	3.7
2-3 days a week	32	6.2
Once a week	19	3.7
Not at all	109	21.1

Social media behavioral intentions

Hypothesis 3, which predicted the retransmitted health research communication would result in stronger intentions to engage with the Facebook content, was supported with the main effect of source on social media behavioral intentions being statistically significant, $F(1, 511) = 4.60$, $p = .033$. As predicted, social media behavioral intentions were stronger for the retransmitted posts ($M = 3.07$, $SD = 1.43$), compared to those only transmitted ($M = 2.96$, $SD = 1.41$).

Effects of modality and health topic

Perceived source credibility

The main effect of modality on perceived source credibility was statistically significant in the retransmitted source condition, $F(2, 511) = 2.73$, $p = .026$. Post-hoc comparison (Bonferroni) results showed significant differences between the video modality and the infographic modality, ($p = .026$), such that perceived source credibility was higher for the video modality ($M = 5.61$, $SD = 1.01$) than for the infographic modality ($M = 5.30$, $SD = 1.12$). There was not a statistically significant difference for the video modality and text/photo modality pair ($p = 1.000$) or for the text/photo modality and infographic modality pair ($p = .171$). The main effect of modality on perceived source credibility was not statistically significant in the transmitted source condition, $F(2, 511) = .886$, $p > .05$.

The main effect of health topic on perceived source credibility was statistically significant in both the retransmitted source condition, $F(1, 511) = 3.659$, $p = .038$, and the transmitted source condition, $F(1, 511) = 5.17$, $p = .023$. The opioids health topic resulted in greater perceived source credibility than the yoga health topic in both the retransmitted and transmitted conditions. Means and standard deviations can be found in Table 2. The modality X health topic interaction for perceived source credibility was not statistically significant, in the retransmitted, $F(2, 511) < 1$, or transmitted condition, $F(2, 511) < 1$.

Perceived message effectiveness

As with the findings for perceived source credibility, the main effect of modality on perceived message effectiveness was statistically significant in the retransmitted condition, $F(2, 511) = 3.15$, $p = .044$, but not in the transmitted condition, $F(2, 511) = .27$, $p > .05$. For the retransmitted condition, post-hoc comparison (Bonferroni) again showed significant differences between the video and infographic modality, ($p = .042$), such that perceived message effectiveness was higher for the video modality ($M = 4.21$, $SD = .74$) than for the infographic modality ($M = 3.99$, $SD = .87$). Again, there was not a significant difference for the video and text/photo pair ($p = .320$) or the text/photo and infographic pair ($p = .100$).

The health topics had similar effects on perceived message effectiveness as they did on perceived source credibility. The main effect of health topic on perceived message effectiveness was statistically significant in both the retransmitted condition, $F(1, 511) = 31.49$, $p < .001$, and the transmitted condition, $F(1, 511) = 25.18$, $p < .001$. Similar to perceived source credibility, the opioids health topic resulted in greater perceived message effectiveness than the yoga health topic in both the retransmitted and transmitted conditions. As with perceived source credibility, the modality X health topic interaction for perceived message effectiveness was not statistically significant in the retransmitted, $F(2, 511) < 1$, or transmitted condition, $F(2, 511) < 1$.

Health behavioral intentions

There was not a significant main effect of modality on health behavioral intentions in the retransmitted, $F(2, 511) = 1.17$, $p = .311$, or transmitted condition, $F(2, 511) = .39$, $p = .677$. There was a statistically significant effect of health topic on health behavioral intentions. This was true for both the retransmitted, $F(1, 511) = 83.96$, $p < .001$, and the transmitted condition, $F(1, 511) = 63.58$ $p < .001$. Stronger behavioral intentions were reported for the opioids health topic, compared to the prediabetes health topic, in both conditions. The modality X health topic interaction was not significant for health behavioral intentions in the retransmitted, $F(2, 511) < 1$, or transmitted condition, $F(2, 511) < 1$.

Social media behavioral intentions

Similar to health behavioral intentions, there was not a significant main effect of modality on social media behavioral intentions in either the retransmitted, $F(2, 511) = .41$, $p = .663$, or transmitted condition, $F(2, 511) = 1.18$, $p = .308$. There was a significant main effect of health topic on social media behavioral intentions in both the retransmitted, $F(1, 511) = 8.76$, $p = .003$, and the transmitted condition, $F(1, 511) = 5.70$, $p = .017$. Social media behavioral intentions were stronger for the opioids (compared to yoga) topic in both conditions. As with all other interaction analyses, the modality X health topic interaction for social media behavioral intentions was not statistically significant in the retransmitted condition, $F(2, 511) < 1$, or in the transmitted condition, $F(2, 511) < 1$.

Discussion

In an effort to suggest dissemination via social media as a solution for improving the communication of health research findings to members of the public utilizing social

Table 2. Mean and Standard Deviation of Health Topic on Dependent Variables in Amplified and Non-Amplified Source Conditions.

	Perceived Source Credibility		Perceived Message Effectiveness		Health Behavioral Intentions		Social Media Behavioral Intentions	
	M (SD)	*p*	*M (SD)*	*p*	*M (SD)*	*p*	*M (SD)*	*p*
Amplified								
Opioids	5.58 (1.00)	.038	4.30 (.71)	<.001	4.19 (1.33)	<.001	3.26 (1.46)	.003
Yoga	5.38 (1.14)		3.88 (.96)		3.05 (1.47)		2.89 (1.40)	
Non-Amplified								
Opioids	5.46 (.10)	.023	4.20 (.85)	<.001	4.05 (1.37)	<.001	3.11 (1.36)	.017
Yoga	5.24 (1.09)		3.81 (.90)		3.07 (1.45)		2.81 (1.46)	

media, this study investigated how retransmission of health communication research disseminated on social media affects perceived source credibility, perceived message effectiveness, and behavioral intentions, hypothesizing that retransmitted content would prompt message processing and generate positive effects on message perception and persuasion. This study also investigated the role of varying modalities that may influence message processing to see which is most effective.

Retransmission had a significant effect such that retransmitted (i.e., shared) posts resulted in greater perceived source credibility, perceived message effectiveness, and likelihood to engage in the Facebook content. This was in line with the predictions that retransmission from a well-known, credible source can increase credibility perceptions and lead to greater perceived message effectiveness and likelihood to engage in the content (Chaiken & Maheswaran, 1994; Sundar, 2008). Sources with high credibility have been found to have increased message effectiveness in the past (Chaiken & Maheswaran, 1994), as people tend to trust reliable sources (Malka et al., 2009). While an unknown health institution was the original source, the addition of a familiar, credible retransmitter led to more positive perceptions of the message, as has been suggested by Sundar's MAIN model (Sundar, 2008). In increasing positive message perceptions, retransmission likely increased message elaboration (Dong, 2015; Eagly et al., 1978), which then contributed to an increased likelihood of engaging with the content. These findings are important as public engagement in science is low due to disinterest and lack of motivation to process scientific information (National Academies of Sciences, Engineering and Medicine, 2017). The proposed theoretical model suggests a retransmitter source may serve as an effective heuristic for motivating cognitive resource allocation to health findings individuals may otherwise not have an interest in processing. The findings supported these theoretical assumptions, showing the value of a retransmitter source.

Modality did not have a significant main effect on message perception and persuasion, but did have an effect on perceived source credibility and message effectiveness when the posts were retransmitted. When retransmitted, the video modality resulted in significantly higher perceived credibility and perceived effectiveness, compared to the infographic modality. These effects of modality in the retransmitter condition, but not within the transmitter condition, can help to draw potentially important conclusions. It supports our theoretical suggestion that the effects of one message feature may be partially dependent on the effects of the other features as it is possible that the significant effect of modality only occurred in the retransmitted condition since elaboration was increased when the post was retransmitted. In this case, it was when participants allocated more cognitive resources to processing the posts that modality made a difference (i.e, video was perceived better than the infographic). Thus, these results support our proposition that modality may be a significant message characteristic if an individual chooses to pay attention to the health research findings as a result of the content being retransmitted by a well-known, credible source. Ultimately, the findings provide evidence that social media health posts from a somewhat unknown source may not be elaborated unless they are retransmitted by another source. And, when they are not elaborated, modality will have little impact. This finding is similar to that of Jones et al. (2003) in which message framing only had an effect when motivation for elaboration increased as a result of a credible source. While Jones et al. (2003) illustrate the role of a credible (vs. non-credible) source improving message elaboration, this study illustrates the role of a retransmitter (vs. transmitter) source having a significant effect.

When the posts were retransmitted, the video modality resulted in the highest perceived source credibility and highest perceived message effectiveness of the three modalities. This may have been the result of the gradual pacing and redundancy of content in the videos making processing easier (Drew & Grimes, 1987; Hsia, 1977; Reese, 1984). As dual-coding suggests, the combination of visual and verbal information may help improve information processing (Paivio, 1986). Previous health communication research has found the use of videos to be beneficial communication tools (Ferguson, 2012; Huang, 2009), and in the case of the social media videos using text as captions, there may have been improved processing through the redundancy of both verbal and visual cues. Because issues in understanding complex scientific information contribute to the difficulty of disseminating scientific findings, this finding is especially useful.

Lastly, the results from this experiment also indicated the health topic within the Facebook posts made a difference for each of the four dependent variables. This is not surprising as research has suggested likelihood for the presence of topic effects due to health topics differing in features such as their relevance, threat, and behavior type (e.g., Anghelcev & Sar, 2011; Wakefield et al., 2010; Witte, 1992). The opioids posts, compared to the yoga/prediabetes posts, resulted in greater perceived source credibility, greater perceived message effectiveness, stronger health behavioral intentions, and stronger social media engagement intentions. The difference in behavior intention may be due to differences in the behaviors associated with the topics, as prior research has found ongoing behaviors are harder to change compared to episodic behavior (Wakefield et al., 2010). Taking the appropriate steps to store opioids may be considered easier than doing yoga on a regular basis since safely storing opioids does not take much time or physical effort compared to a regular yoga practice. Additionally, because the opioid crisis is heavily covered in the news (McGinty et al., 2019), participants may have seen greater importance and had higher risk perceptions relative to the need to safely store opioids.

Practical implications

This study yields practical implications for the intended goal of improving the communication of health research findings using social media. Overall, the retransmission findings illustrate the benefit for organizations to emphasize having their content retransmitted by other well-known, credible sources. While behavioral intention, arguably the most important variable, was not significant, there is still value in increasing the variables for which there were significant results (credibility, message effectiveness, and engagement intentions). If a health institution can find a way to increase shares of its Facebook content beyond its original page, then there is potential for the shared findings to

be more effectively perceived. Additionally, the finding that retransmission increased the likelihood of individuals to "like" or "share" the content is also fundamental as engagement helps spread the information without any added cost to the original organization. Retransmission may not be easy, as the researcher or original institution must convince other organizations that the information is worth sharing, but because this study shows the advantages of retransmission, this serves as a basis for promoting future research that assesses how retransmission can be encouraged. In the context of grant-funded health research, it may be possible to encourage the organization who funded the research (e.g., the NIH) to promote (i.e., retransmit) the findings upon study completion. Additionally, researchers can foster relationships with organizations in their community (e.g., the health department or local hospital) such that the organization sees the value in the research and wants to share the findings. Within academia, researchers could also seek opportunities for their university to retransmit the content on university social media accounts. The modality findings show that choosing an appropriate modality may not be the utmost priority as modality did not have a huge effect. However, if the goal is met of getting people to allocate attention to health research messages, it may be useful to invest in the creation of short videos to communicate findings.

Limitations and future research

The results of this study should be interpreted in light of a few limitations. Rather than measuring changes in behaviors, this study relied on behavioral intentions. Additionally, only two health topics were included. Because the findings illustrated that health topics likely affect message processing, further research (with additional topics) may be useful in understanding the role of health topics and why such effects occurred. As this study illustrated the value of retransmission, it would also be useful for future research to focus on means of increasing the likelihood of transmission by credible institutions. Further research could also expand on how retransmission functions in the context of health findings on social media by investigating other aspects of retransmission (e.g., the effects of types and quantities of retransmission sources).

Lastly, this study only examined social media dissemination of health research findings on Facebook, rather than multiple social media platforms. It is possible other social media platforms might have a different influence. For example, social media platforms, in nature, differ in their functionally and ability to allow retransmission to occur. While Twitter has a "retweet" function that allows for retransmission, Instagram does not have a "share" feature similar to that of Facebook. Users can retransmit content within their Instagram "story," but this differs from sharing the content to their personal page, as Instagram stories are temporary (i.e., usually viewable for 24 hours). These platform differences create new challenges for retransmission that should be investigated in the future. Additionally, social media platforms differ in the content they typically include (e.g., Instagram being more visual-based and Facebook allowing for sharing of outside websites), and this could have an influence on how each modality performs and how receptive users are to the content on the particular platform. These differences, coupled with differences in each platform's users (i.e., demographics) could have an influence on how perceptions of health research findings differ across platforms. Thus, future research should investigate if the patterns found in the current study hold true on other social media. The extant literature on source credibility effects, in combination with this study's findings, lead us to believe retransmission would be effective on platforms outside of Facebook, but the differences in retransmission capabilities of other networks make this a worthy area for future investigation.

Despite the limitations, this research provides a better theoretical understanding of how retransmission and modality can affect the processing of health research findings communicated on social media. In doing so, the study lends practical implications and discusses the potential of this medium for health communication. The advantages of social media, coupled with the power of retransmission, may improve dissemination, and, as a result, may aid in better human health.

Notes

1. Annual household income and highest completed level of education participant demographics are available from the corresponding author.

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References

Akin, H., & Scheufele, D. A. (2017). In. In K. H. Jamieson, D. Kahan, & D. A. Scheufele (Eds.), *Oxford handbook of the science of science communication* (pp. 25–34). Oxford University Press.

Anghelcev, G., & Sar, S. (2011). The influence of pre-existing audience mood and message relevance on the effectiveness of health PSAs: Differential effects by message type. *Journalism & Mass Communication Quarterly*, *88* (3), 481–501. https://doi.org/10.1177/107769901108800302

Armstrong, A. W., Idriss, N. Z., & Kim, R. H. (2011). Effects of video-based, online education on behavioral and knowledge outcomes in sunscreen use: A randomized controlled trial. *Patient Education and Counseling*, *83* (2), 273–277. https://doi.org/10.1016/j.pec.2010.04.033

Bracken, C. C., & Dalessandro, A. (2017). Modality and medium characteristics. In P. Rössler, C. A. Hoffner, & L. Zoonen (Eds..), *The international encyclopedia of media effects* (pp. 1–12). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118783764.wbieme0205

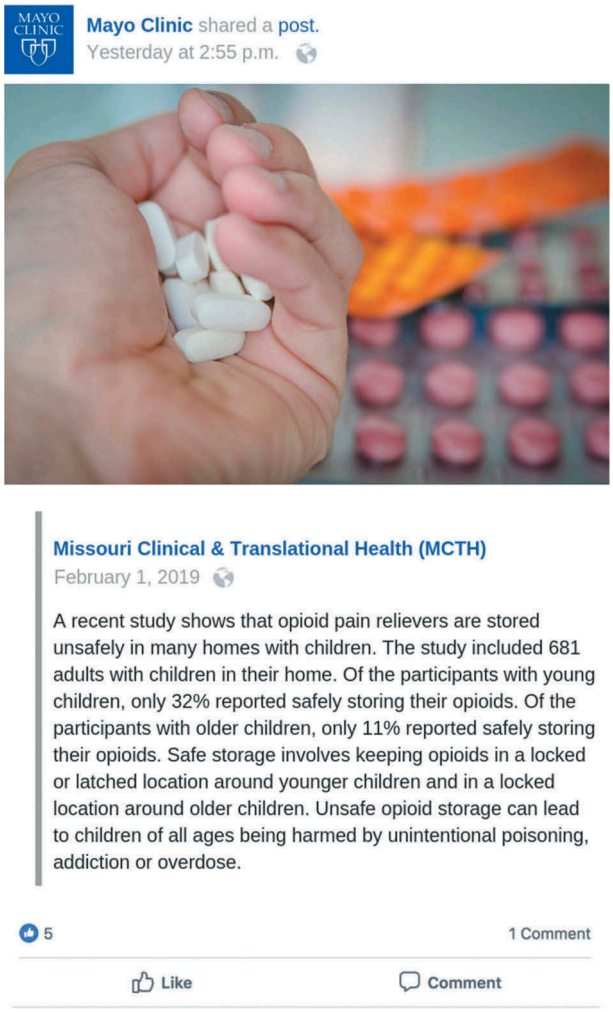
Breland, J. Y., Quintiliani, L. M., Schneider, K. L., May, C. N., & Pagoto, S. (2017). Social media as a tool to increase the impact of public health research. *American Journal of Public Health, 107*(12), 1890–1891. https://doi.org/10.2105/AJPH.2017.304098

Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on evaluation judgments. *Journal of Personality and Social Psychology*, *66*(3), 460–473. https://doi.org/10.1037//0022-3514.66.3.460

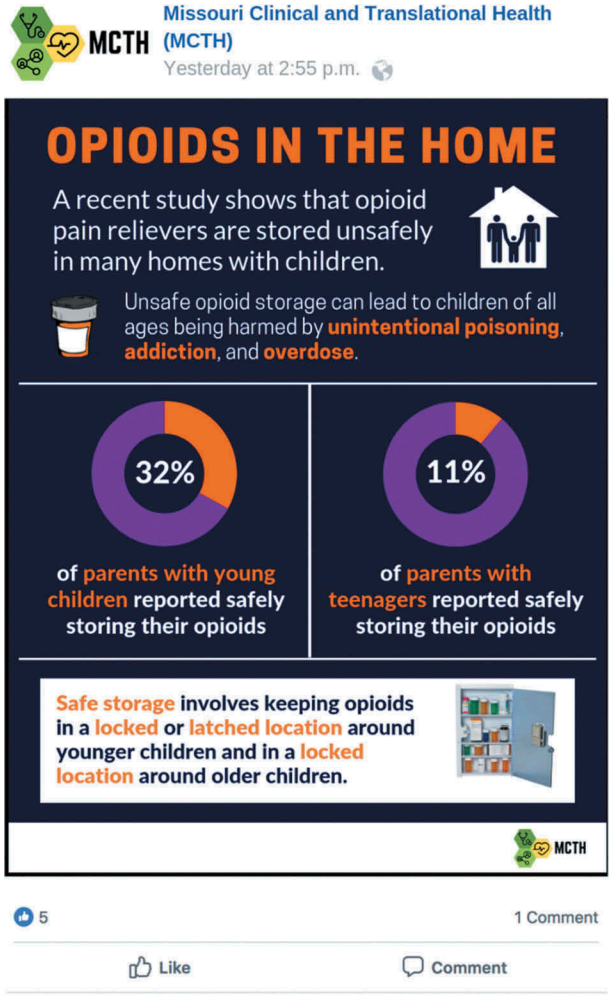
Cook, M. P. (2006). Visual representations in science education: The Influence of prior knowledge and Cognitive Load Theory on

instructional design principles. *Science Education*, *90*(6), 1073–1091. https://doi.org/10.1002/sce.20164
Dillard, J., & Ye, S. (2008). The perceived effectiveness of persuasive messages: Questions of structure, referent, and bias. *Journal Of Health Communication*, *13*(2), 149–168. https://doi.org/10.1080/10810730701854060
Dong, Z. (2015). How to persuade adolescents to use nutrition labels: Effects of health consciousness, argument quality, and source credibility. *Asian Journal Of Communication*, *25*(1), 84–101. https://doi.org/10.1080/01292986.2014.989241
Drew, D. G., & Grimes, T. (1987). Audio-visual redundancy and TV news recall. *Communication Research*, *14*(4), 452–461. https://doi.org/10.1177/009365087014004005
Dunlap, J. C., & Lowenthal, P. R. (2016). Getting graphic about infographics: Design lessons learned from popular infographics. *Journal of Visual Literacy*, *35*(1), 42–59. https://doi.org/10.1080/1051144x.2016.1205832
Eagly, A., Wood, W., & Chaiken, S. (1978). Causal inference about communicators and their effect on opinion change. *Journal of Personality and Social Psychology*, *36*(4), 424–435. https://doi.org/10.1037/0022-3514.36.4.424
Farook, S. F., & Abeysekera, N. (2016). Influence of social media marketing on customer engagement. *International Journal of Business and Management Invention*, *5* (12), 115–125. https://www.ijbmi.org/current-issue.html
Fazio, L. K., Brashier, N. M., Payne, B. K., & Marsh, E. J. (2015). Knowledge does not protect against illusory truth. *Journal of Experimental Psychology: General*, *144*(5), 993–1002. https://doi.org/10.1037/xge0000098
Ferguson, L. A. (2012). Implementing a video education program to improve health literacy. *The Journal for Nurse Practitioners*, *8*(8), e17–e22. https://doi.org/10.1016/j.nurpra.2012.07.025
Glaser, R. (1990). The reemergence of learning theory within instructional research. *American Psychologist*, *45*(1), 29–39. https://doi.org/10.1037/0003-066X.45.1.29
Hovland, C., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly*, *15*(4), 635–650. https://doi.org/10.1086/266350
Hsia, H. J. (1977). Redundancy: Is it the lost key to better communication? *AV Communication Review*, *25*(1), 63–85. https://doi.org/10.1007/BF02799311
Huang, E. (2009). Six cases of e-health videos on hospital web sites. *E-Service Journal*, *6*(3), 56–71. https://doi.org/10.1353/esj.0.0015
Jones, L. W., Sinclair, R. C., & Courneya, K. S. (2003). The effects of source credibility and message framing on exercise intentions, behaviors, and attitudes: An integration of the elaboration likelihood model and prospect theory. *Journal of Applied Social Psychology*, *33* (1), 179–196. https://doi.org/10.1111/j.1559-1816.2003.tb02078.x
Kim, H. S., Lee, S., Cappella, J. N., Vera, L., & Emery, S. (2013). Content characteristics driving the diffusion of antismoking messages: Implications for cancer prevention in the emerging public communication environment. *JNCI Monographs*, *47*(47), 182–187. https://doi.org/10.1093/jncimonographs/lgt018
Lang, A. (1995). Defining audio/video redundancy from a limited-capacity information processing perspective. *Communication Research*, *22*(1), 86–115. https://doi.org/10.1177/009365095022001004
Lang, A. (2000). The limited capacity model of mediated message processing. *Journal Of Communication*, *50*(1), 46–70. https://doi.org/10.1111/j.1460-2466.2000.tb02833.x
Lang, A. (2006). Using the limited capacity model of motivated mediated message processing to design effective cancer communication messages. *Journal of Communication*, *56*(suppl_1), S57–S80. https://doi.org/10.1111/j.1460-2466.2006.00283.x
Luarn, P., Yang, J.-C., & Chiu, Y.-P. (2014). The network effect on information dissemination on social network sites. *Computers in Human Behavior*, *37*, 1–8. https://doi.org/10.1016/j.chb.2014.04.019
Malka, A., Krosnick, J. A., & Langer, G. (2009). The association of knowledge with concern about global warming: Trusted information sources shape public thinking. *Risk Analysis*, *29*(5), 633–647. https://doi.org/10.1111/j.1539-6924.2009.01220.x
Marín-González, E., Malmusi, D., Camprubí, L., & Borrell, C. (2017). The role of dissemination as a fundamental part of a research project: Lessons learned from SOPHIE. *International Journal Of Health Services*, *47*(2), 258–276. https://doi.org/10.1177/0020731416676227
McCroskey, J. C., & Teven, J. J. (1999). Goodwill: A reexamination of the construct and its measurement. *Communication Monographs*, *66*(1), 90–103. https://doi.org/10.1080/03637759909376464
McGinty, E. E., Stone, E. M., Kennedy-Hendricks, A., Sanders, K., Beacham, A., & Barry, C. L. (2019). U.S. news media coverage of solutions to the opioid crisis. *Preventive Medicine*, *126*, 1–6. https://doi.org/10.1016/j.ypmed.2019.105771
National Academies of Sciences, Engineering, and Medicine [National Academies]. (2017). *Communicating science effectively: A research agenda*. The National Academies Press. https://doi.org/10.17226/23674
Nisbet, M. C., Scheufele, D. A., Shanahan, J., Moy, P., Brossard, D., & Lewenstein, B. V. (2002). Knowledge, reservations, or promise? A media effects model for public perceptions of science and technology. *Communication Research*, *29*(5), 584–608. https://doi.org/10.1177/009365002236196
Otten, J. J., Cheng, K., & Drewnowski, A. (2015). Infographics and public policy: Using data visualization to convey complex information. *Health Affairs*, *34*(11), 1901–1907. https://doi.org/10.1377/hlthaff.2015.0642
Paivio, A. (1986). *Mental Representations*. Oxford University Press.
Patel, S. (2016). *85 percent of Facebook video is watched without sound*. Digiday. https://digiday.com/media/silent-world-facebook-video/
Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer-Verlag.
Reese, S. D. (1984). Visual-verbal redundancy effects on television news learning. *Journal of Broadcasting*, *28*(1), 79–87. https://doi.org/10.1080/08838158409386516
Pew Research Center. (2018, February 5). *Social media fact sheet*. http://www.pewinternet.org/fact-sheet/social-media/
Schnitzler, K., Davies, N., Ross, F., & Harris, R. (2016). Using Twitter™ to drive research impact: A discussion of strategies, opportunities and challenges. *International Journal Of Nursing Studies*, *59*, 15–26. https://doi.org/10.1016/j.ijnurstu.2016.02.004
Strekalova, Y. A. (2017). Health risk information engagement and amplification on social media: News about an emerging pandemic on Facebook. *Health Education & Behavior*, *44*(2), 332–339. https://doi.org/10.1177/1090198116660310
Sun, N., Rau, P., & Ma, L. (2014). Understanding lurkers in online communities: A literature review. *Computers in Human Behavior*, *38*, 110–117. https://doi.org/10.1016/j.chb.2014.05.022
Sundar, S. S. (2008). The MAIN model: A heuristic approach to understanding technology effects on credibility. In M. J. Metzer & A. J. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 73–100). The MIT Press.
Suran, M., Holton, A. E., & Coleman, R. (2014). Topical punch. *Journalism & Mass Communication Quarterly*, *91*(4), 725–739. https://doi.org/10.1177/1077699014550093
Sutton, J., Gibson, C. B., Spiro, E. S., League, C., Fitzhugh, S. M., & Butts, C. T. (2015). What it takes to get passed on: Message content, style, and structure as predictors of retransmission in the Boston marathon bombing response. *Plos One*, *10*(8), 1–20. https://doi.org/10.1371/journal.pone.0134452
Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *The Lancet*, *376*(9748), 1261–1271. https://doi.org/10.1016/s0140-6736(10)60809-4
Wilson, E., & Sherrell, D. (1993). Source effects in communication and persuasion research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science*, *21*(2), 101–112. https://doi.org/10.1007/BF02894421
Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, *59*(4), 329–349. https://doi.org/10.1080/03637759209376276
Witte, K., & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*, *27* (5), 591–615. https://doi.org/10.1177/109019810002700506
Xu, Q. (2017). Dual process models of persuasion. In P. Rössler, C. A. Hoffner, & L. Zoonen (Eds..), *The international encyclopedia of media effects* (pp. 1–13). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118783764.wbieme0074

Appendix



1. Photo+Text in Amplified Source Condition



2. Infographic in Original Source Condition

3. Screenshot of Video in Original Source Condition

Examples of experimental stimuli.