

**When audiences become advocates:
Self-induced behavior change through health message posting in
social media**

Abstract

Couched within the self-effects paradigm of social media influence, this research examines how posting a health promotion message to one's social media influences one's own, versus others', later health behaviors, with emphasis on emotional intensity and message sharing directives. 382 participants viewed one of eight versions of a melanoma awareness video and were given the opportunity to post it to their Facebook page. Video sharers reported increased sun safety behavior one week later, even after accounting for a range of sun safety-related predictors. Emotional intensity and self-efficacy emerged as key message sharing predictors. These findings align with cognitive dissonance theory, offering unique evidence in a mediated context with relatively enduring effects, and expands the dialogue about the self-persuasive power of social media.

KEY WORDS: message sharing, social media, self-effects, health, emotion, dissonance

When audiences become advocates:**Self-induced behavior change through health message posting in social media**

The rapid diffusion of social media has raised numerous questions regarding its influence in a wide range of contexts. Within health communication specifically, research has primarily examined how health messages are disseminated through social media and to what effect (see Grajales, Sheps, Ho, Novak-Lauscher, & Eysenbach, 2014, for a review). Although clearly important questions, such inquiries typically focus on the effect that health-related social media posts have on the message receiver. However, an intriguing alternative question is: what impact does posting health-related messages to social media outlets have on the behavior of the message poster themselves? Although the phenomenon of so-called “self-persuasion” is acknowledged in psychological processes of influence (e.g., dissonance theory; Festinger, 1957) and calls for greater investigation of such processes have emerged recently (Valkenburg, 2017), this phenomenon has not yet received close empirical testing within social media contexts. Yet, consider the following: at present there are an estimated 1.49 billion daily users and 2.27 billion monthly users of Facebook alone (fb.com, 2018). Further, among US users of social media, 36% share news stories sometimes or often (Mitchell, Gotfried, Barthel, & Shearer, 2016). Given the extensive diffusion of social media in the current environment and the relative frequent sharing of messages that takes place within that context,

the potential for self-persuasion is profound.

If it is indeed the case that social media posting can serve as a means of self-persuasion, understanding the features of messages that lead to message sharing is especially important. There is much evidence that message emotionality generates message diffusion (e.g., Berger & Milkman, 2012; Dunlop, Kashima, & Wakefield, 2010). What is as yet unknown, however, is the extent to which the explicitly cognitive route of asking people to share messages adds any additional value.

The purpose of this research, then, is two-fold. First, given the gap in understanding how message posting affects the message poster, we investigate how public sharing of a health message via social media affects the message sharer's own adherence to message recommendations. Second, we aim to unpack the predictors of such sharing, with special focus on emotional arousal and directive to share the message with others. By investigating these two phenomena, we not only illuminate a potential effect of social media use that has heretofore been largely overlooked, but we also highlight message features that may trigger such influence. We begin with a discussion of the phenomenon of message sharing via social media, the sharing of health information in particular, before addressing the phenomenon of self-persuasion as a result of message sharing behavior.

Social Media and Social Sharing

The advent of social media, including Facebook, Twitter, blogs, and other online channels, has allowed for an unprecedented level of message

sharing (Berger & Iyengar 2013), which serves multiple important purposes, including those related to emotional expression, information sharing, and social bonding (Flanagin & Metzger, 2001; Ho & Dempsey, 2008). From an influence standpoint, social media platforms are particularly interesting for the opportunities they provide to share messages with others that may, in turn, spread that message's influence through one's social network (Atkin & Rice, 2013; Bond et al., 2012).

Research over the past decade has considered what content-specific, intrapersonal, and interpersonal factors motivate the sharing of online messages (Botha, 2014; Cappella, Kim, & Albarracín, 2015; Scholz, Baek, O'Donnell, Kim, Cappella, & Falk, 2017). In addition to normative pressures and self-enhancement goals (Taylor, Strutton, & Thompson, 2012), emotion has repeatedly emerged as a key factor in the desire to use social media (van Koningsbruggen, Hartmann, Eden, & Veling, 2017) and subsequent message diffusion. This is unsurprising in light of the accumulated evidence that people have an instinctive need to disclose to others when they experience emotionally-charged events, which has been widely documented across cultures, gender, and age groups (Rimé, 1995). Indeed, the more intense the emotional experience or the greater the emotional disruption, the more likely it is to be socially shared (Rimé, Mesquita, Philippot, & Boca, 1991) and shared repetitively over an extended period of time (Rimé, 1995; Harber & Cohen, 2005). Evidence in multiple media contexts supports the assertion that the emotional intensity generated by message exposure,

including health messages (e.g., Dunlop, Kashima, & Wakefield, 2010), shocking news stories (e.g., Kubey & Peluso, 1990), and viral videos (e.g., Berger & Milkman, 2012), is associated with their diffusing through social networks (see also Bell & Sternberg, 2001; Botha, 2014; Ho & Dempsey, 2008; Nelson-Field et al., 2013).

Sharing of Health Information in Social Media

Although a relatively recent development, the sharing and dissemination of health information in social media contexts is a relatively common practice—1 in 3 users posts news stories to their social media (Mitchell et al., 2016), and 1 in 9 social media users share health-promoting messages (see Fox, 2011). Such sharing is useful for numerous outcomes, including access to health information and providing and receiving emotional support (e.g., Moorhead et al., 2013; Rains & Keating, 2011; Sood, Sarangi, Pandey, & Murugiah, 2011; Ziebland & Wkyke, 2012). Importantly, a meta-analysis of internet-based web interventions indicated a small but statistically significant effect on health-related behavior (Webb, Joseph, Yardley, & Mitchie, 2010).

Despite these benefits, there is minimal attention to how a social media user's *own* message sharing behavior might influence their *own* health behavior, a phenomenon that fits within the paradigm of self-effects from social media use (Valkenburg, 2017). A few studies, however, do speak to the likelihood of such occurrences. One small qualitative study of weight loss bloggers suggested that their blogging activity may aid in weight loss

because, in part, the blog contains online disclosures to which they feel accountable (Oostveen, 2011). Similarly, Geusens and Beullens (2017, 2018) found that adolescents' sharing of alcohol consumption behaviors on social media predicted alcohol consumption attitudes and self-reported binge drinking one year later. While these studies provide evidence consistent with the notion of self-persuasion in social media contexts, they are limited in that they rely exclusively on self-report rather than actual sharing or health behavior. As well, they do not probe the psychological mechanism nor the message features responsible for the documented effects.

Predicting Self-Persuasion from Health Message Sharing

Although there are no theories of behavior change that speak directly to the potential influence of posting health messages to social media consistency theories of persuasion—cognitive dissonance theory (Festinger, 1957) in particular —supports this potential (for a review in social media contexts, see Valkenburg, 2017). Dissonance theory suggests that people are driven by the need for consistency between their attitudes and behaviors. Inconsistency between these elements generates psychological discomfort, which in turn motivates change in either attitudes or behavior to resolve the unpleasant feelings inconsistency generates. The hypocrisy paradigm of cognitive dissonance is particularly applicable to the social media context (Dickerson, Thibodeau, Aronson, & Miller, 1992). The hypocrisy paradigm suggests that when individuals both publicly commit to an attitude and are made mindful that their current behavior does not align

with that attitude, they are then motivated to act in attitudinally-consistent ways, which will restore their sense of integrity or general feelings of self-worth (Stone, Wiegand, Cooper, & Aronson, 1997; Stone & Fernandez, 2008).

Social media platforms arguably support the conditions necessary for hypocrisy-induced attitude change. First, if people are exposed to a health-promoting message, viewing the message itself makes the audience mindful of their past related health behavior. Second, if the audience is motivated to – and does – share that message via a social media platform, this act constitutes a public endorsement of the health behavior. Thus, the sharing of health messages via public channels on social media meets the two essential criteria of the hypocrisy paradigm: mindfulness of behavior and public commitment.

Although not in the context of message sharing, there is evidence that public sharing of information in an online environment can alter self-perceptions. For example, Gonzales and Hancock (2008) found that that public blog posting (vs. private writing) about oneself as introverted or extroverted increased self-reported perception of those qualities. Similar results have been found for brand identification (Carr & Hayes, 2017). However such studies do not explain actual behavior nor do they incorporate message sharing in their paradigms.

Yet, if one publicly posts a health message encouraging a particular health behavior, the need for consistency would suggest their future behavior should be consistent with that message's advocacy. As well, by

posting a health message to one's social groups, a person might then perceive that the recipients of the message expect them to "walk the walk" – and therefore follow the recommendations themselves. Rather than focus specifically on why sharing messages might lead to self-persuasion (as discussed above), we wish simply to determine first whether such an effect exists in a behavioral health context. Given the extant work on hypocrisy paradigm in offline contexts affecting behavior we predict:

H1: Those who share a health-related video on social media will be more likely to engage in the recommended health behavior than those who do not.

A next reasonable question is: who is more likely to choose to share a health-related video? Based on the extensive evidence that the intensity of emotional arousal generates message sharing, we expect this to be a key predictor. As such, we predict:

H2: Emotional intensity in response to a health message will positively associate with message sharing to social media.

Message Features to Promote Message Sharing

Assuming support for the above hypotheses, a critical question becomes: what message elements might promote social sharing to media sites? There are two that we explore in this research – one that has received previous attention in the literature (emotional components) and another that has not yet been investigated but has clear potential (instructions to share). To do so, we chose as our stimulus a widely-disseminated video promoting

melanoma awareness entitled *Dear 16-year old me*, which contained a range of emotional elements (humor, fear, sadness) as well as a directive to share the message with others. Myrick and Oliver (2014) found this particular message to evoke mixed emotions, which increased self-reported willingness to share it online, though they did not assess actual message sharing or resulting sun safety behaviors.

Sadness. Regarding emotion, it is clear from Myrick and Oliver (2014) that the sad elements of this message generated stronger desire to share. Given that strong emotion promotes social sharing and that sadness specifically is associated with the desire to reestablish connection with other human beings (Lazarus, 1991) which can be achieved by message sharing, we expect:

H3: Those who view a health message enhanced with sad stories will be more likely to share the message via social media than those who do not.

Humor. An oft-raised concern about negatively-valenced messages, however, is that they may be less likely to be shared given they are likely to dampen the mood of message receivers. Although research suggests emotional intensity, more so than valence, is instrumental in motivating message sharing (e.g., Berger & Milkman, 2012), it is worth considering whether infusing positive affect into a message may enhance the sharing likelihood in social media contexts. Humor in particular has received substantial attention as a desirable message feature, generating message liking (Eisend, 2009). Further, humor has been shown to reduce anxiety

around a health topic and thus facilitate persuasion (Nabi, 2016). Moreover, it is possible that individuals would be more likely to share a video that includes humor to satisfy self-enhancement goals (i.e., they want to be seen as funny/humorous; Taylor et al., 2012) or to be perceived as someone who posts things that are received positively by those in their network. Thus, we predict

H4: Viewers will be more likely to share a health promoting video that contains humor compared to one that does not.

Directive to share. Finally, a common message trope involves directly encouraging audience members to share the message on their social network sites. As such, it is important to determine whether a directive to share a message with others would, in fact, increase sharing behavior. Indeed, sharing messages via social media is often considered an indicator of success in the eyes of researchers and marketers (e.g., Eckler & Bolls, 2011; Guadagno et al., 2014) as well as for online health campaigns (Korda & Itani, 2013). Yet, no studies to our knowledge test if explicit requests that viewers' share a message with others influence whether they actually engage in message sharing with their networks. If such directions cue latent beliefs that a message would benefit others, we would expect:

H5: Viewers will be more likely to share a message that contains a directive to share it via social media than a message that does not.

If evidence is found for the hypothesized link between message sharing and health behavioral enactment and for the influence of message

design elements on sharing, a more complete model for the larger process of influence will be developed.

Method

Participants

Three hundred and eighty-two undergraduate students participated in this research in exchange for course research credit. A majority of participants were female (74%) and ranged in age from 18 to 26 ($M = 19.30$, $SD = 1.35$). The sample was ethnically diverse with 38% Caucasian, 28% Asian, 21% Hispanic, 4% African American, and 9% other. Thirteen percent reported a family history of melanoma. Of the 94% who indicated having a Facebook account, 36% indicated that they never share news stories from the Web on Facebook, 33% share rarely (every few months), 20% share occasionally (1-2 times per month), and 11% share regularly (once a week to multiple times per day). Of the original 382 participants, 367 (96%) completed the follow-up survey one week after the lab portion of the study.

Study Design

This study focused on the behavioral effects of health message sharing. Message sharers were identified by whether they shared a video health message to their Facebook page during the study or not. The messages varied along three dimensions: humor (present/absent), sadness (present/absent), and directive to share (present/absent). One week later, participants reported sun safety behavior.

As the question of interest is, when given the opportunity to share a

particular health message, how do sharers' later health behavior differ from non-sharers, all participants watched a version of the stimulus message. Further, given the voluntary nature of message sharing in real media environments, all participants were given choice regarding posting rather than being assigned to a condition that required or prevented message sharing.

Procedures

The study was introduced as interested in people's reactions to YouTube videos. Upon arriving in the lab, participants were seated in individual rooms and asked to logon to their Facebook account if they had one. They were then directed to the on-line survey that assessed knowledge about and awareness of several health-related topics, including skin cancer. Participants were then asked to complete measures of several personality trait to allow for some temporal separation between health behavior assessment and message viewing.

Participants then watched one of eight edited versions of a melanoma awareness video, *Dear 16-Year-Old-Me* produced by the David Cornfield Melanoma Fund. After viewing, participants were asked if they would like to share the video on their Facebook page and given the opportunity to do so. Participants then completed a series of questions regarding their emotional responses to the video; assessments of the health message; their attitudes, intentions, efficacy for engaging in sun safety behaviors; and basic demographics. One-week after the lab visit, participants were emailed a link

to a brief follow-up online questionnaire assessing message recall, engagement with the video since first viewing it, and sun safety behaviors enacted in the previous week. All data were collected in May and October of 2014 at a university located in a coastal California community, where rain is infrequent and sun safety is a relevant issue year round.

Stimuli

Dear 16-Year-Old Me is a five-minute melanoma awareness video that begins with a compilation of several individuals humorously describing things they wish they had known as a 16-year old (e.g., unflattering perms, the effects of whiskey). They then describe to their 16-year old selves when they were diagnosed with melanoma and their treatment experiences. Physicians describe the seriousness of a melanoma diagnoses, and two women share very moving stories about loved ones who have died from melanoma. The video then highlights how people can both check for and avoid skin cancer. The video concludes with the patients imploring viewers to “share this link,” “tweet this link,” and “post this to your Facebook page.”

The video was professionally edited to reflect three manipulations. First, the humorous content throughout was either retained or removed. Second, the tragic anecdotes about lost loved ones were either retained or removed. Finally, the directives to socially share the video was either retained or removed. The manipulations were approximately the same length (directive to share: 31 seconds; humor: 37 seconds; sad story: 42 seconds). The three manipulations were crossed, resulting in eight

conditions ranging from 3:02 to 4:51 minutes. Despite their differences, all versions of the video were perceived as equally effective (based on an index of perceived believability and convincingness, $p = .77$).

Measures

The measures are presented in the order in which they were completed. Measures up to and including trait of empathy were assessed prior to message exposure. Measures beginning with message sharing were assessed after message exposure. Several variables beyond those central to hypothesis testing were included as potential control variables (e.g., personality traits), to assess likely influences on behavior (e.g., past behavior), or to mask the study's main focus (e.g., health behaviors other than sun safety). Scale means are based on the averaged sums of scale items. Variables that did not factor into the analyses are noted, but not described in full.

Skin cancer relevance. Participants rated the extent to which regular exercise, STDs, and skin cancer were relevant to them, on 7-point scales (1 = *not at all*, 7 = *very much*). The four items included "the issue of regular exercise/skin cancer/STDs is: relevant to me, important to me, relevant to people I care about, and important to people I care about", and formed a single factor scale (skin cancer $\alpha = .85$, 67% variance explained; $M = 4.63$, $SD = 1.58$). Measures of skin cancer severity, susceptibility, and perceived knowledge were then assessed, though did not factor into the reported analyses.

Empathy. Given empathy influences intensity of emotional reactions to media messages, the short-form Interpersonal Reactivity Index (IRI; Davis, 1980) was included to assess empathy. Seven items, assessed on 5-point scales (1 = *does not describe me well*, 5 = *describes me very well*), formed a single-factor, reliable index ($\alpha = .79$, 45% variance explained; $M = 4.00$, $SD = .66$). Sample items include “I often have tender concerned feelings for people less fortunate than me” and “I am quite touched by things that I see happen.”

Post-viewing message sharing. After message viewing, participants were asked if they would like to share the message on Facebook. If they answered “yes” ($n = 129$, 34%), they were given the opportunity to click a Facebook link that allowed them to post the video to their Facebook page. When they returned to the survey, they were asked if they did, in fact, post the video ($n = 117$). At the end of the survey, participants were asked if they would like to be emailed a URL link to the video they saw. Those who replied yes (17%) were sent the video link within 24 hours of study participation.

Emotional intensity. After the opportunity to share the message, participants were asked to indicate how much of 19 emotions they experienced while watching the video on 1 (*not at all*) to 7 (*very much*) scales. Ten of these items assessed the emotions most likely to be evoked by the messages (i.e., fear, sadness, amusement, hope), which were combined to create a measure of overall emotional intensity ($\alpha = .84$; $M =$

4.05, $SD = 1.10$). Other emotions were also assessed, though not expected to be strongly aroused by the video, including anger, guilt, happiness, and disgust (combined $M = 2.02$, $SD = .78$). Given these were not expected responses to the message, with the low means confirming this expectation, they were dropped from further consideration.

Message processing depth. Five items from Wolski and Nabi's (2000) message processing scale assessed how closely participants processed the message, measured on 7-point Likert scales. Sample items include "While watching the video, I paid close attention to each point that was made", and "I was very interested in what the speakers had to say. These items formed a single-factor reliable scale ($\alpha = .84$, 62% variance explained; $M = 5.09$, $SD = 1.05$).

Sun safety attitudes. To assess post-viewing sun safety attitudes, participants responded to three sets of items assessed on three 7-point semantic differential scales (1 = *bad/negative/unfavorable*, 7 = *good/positive/favorable*). Each set related to a different sun safety behavior. Items included: "I think that my wearing sunscreen every day is", "I think that my checking my skin monthly for changes that could signify skin cancer is", and "I think that my visiting a dermatologist for a skin cancer screening is". These nine items reflected a single factor indicator of general sun safety attitudes ($\alpha = .94$, 70% variance explained; $M = 5.87$, $SD = 1.33$).

Sun safety self-efficacy. Given self-efficacy is a strong predictor of behavioral enactment, self-efficacy was measured with four items assessed

on 7-point Likert scales. Items include “I believe I can apply sunscreen daily”, “I think I can check my skin once a month for unusual growths or changes in my skin”, “I am able to detect signs of skin cancer if I checked my skin”, and “I am able to avoid excessive sun exposure”. These items formed a single factor reliable index of sun safety self-efficacy ($\alpha = .70$, 54% variance explained; $M = 5.41$, $SD = 1.12$).

Behavioral intentions. Eight items assessed intentions to engage in sun safety behaviors after message exposure. The first four items, measured on a 7-point Likert scale, included: “I plan to: use sunscreen daily in the coming weeks, check my skin once a month, see a dermatologist in the near future, and use clothes for sun protection (e.g., hats, long-sleeves) regularly in the weeks ahead.” The second set of four items asked about the likelihood (1 = *not at all likely*, 7 = *very likely*) of engaging in each of those behaviors. Combined, the eight items formed a reliable, single factor index of sun safety intentions ($\alpha = .88$, 55% variance explained; $M = 4.71$, $SD = 1.35$).

Demographics. Participants were asked their age, gender (0 = male, 1 = female), year in school, and ethnicity (0 = non-white, 1 = white). They were then asked if they have a family history of melanoma as well as their risk factors for skin cancer (severe sunburn before the age of 18, skin tone, hair and eye color).

Past sun safety behavior. Participants were then asked about their past sun safety behaviors, including whether or not (no/yes) they typically

avoid sun exposure to protect their skin, wear sunscreen on their face daily, wear sunscreen on other parts of their body daily, had performed a skin self-exam before, have seen a dermatologist for unusual changes in their skin, and typically wear clothes to protect themselves from the sun. The number of times they said yes were added to create a 0-6 scale of past sun safety behavior ($M = 1.88$, $SD = 1.35$).

The study concluded with asking participants whether they have a Facebook page, how often they share message from the web on Facebook, and whether they had seen the video message before. Finally, we asked again whether they shared the video during the study and if they would like a copy of the video's URL e-mailed to them.

One-Week Follow-up Measures

Open-ended recall and engagement. Participants were asked to name the health topic addressed in the study's video. Ninety-eight percent properly noted skin cancer, with the remainder mentioning the topic of another study running at the time. Participants were then asked (no/yes) if they watched the video again (9% did), if they discussed it with anyone (47% did), and if they shared the video since the study (23% did).

Sun safety behaviors. Participants were asked to indicate (no/yes) if they had performed a variety of sun safety behaviors in the past week: increased sunscreen use, avoided excessive sun exposure, performed skin self-examination, contacted health services to have a skin exam, and worn clothes to protect from the sun. These items were combined to form a

measure of sun safety behaviors on a 0-5 scale ($M = 1.60$, $SD = 1.36$). Given this scale's items are differently worded than the past behavior items and has one fewer item, past behavior was used as a covariate rather than a change score computed. Of note, analyses based on just the three sun protection behaviors that are expected to be enacted regularly (sunscreen use, avoiding exposure, and protective clothing; $M = 1.06$; $SD = 1.09$) yielded results comparable to the full measure. Given the full set of items represents a wider-range of sun safety behaviors possible in the week following message exposure, the results for the complete measure are thus reported.

Results

Manipulation Assessments and Preliminary Analyses

Independent sample t-tests indicated that those in the humor condition found the message more amusing than those in the non-humor condition, $M = 2.62$, $SD = 1.71$ vs. $M = 1.84$, $SD = 1.28$, $t(378) = -5.01$, $p < .001$, Cohen's $d = .52$. Similarly, participants in the sad story condition reported greater sadness than those who viewed the stimuli without those anecdotes, $M = 5.01$, $SD = 1.36$ vs. $M = 4.35$, $SD = 1.58$, $t(379) = -4.41$, $p < .001$, Cohen's $d = .45$. Given the directive to share had no associated psychological state to assess, no manipulation check was included.

Of the 382 participants who completed both parts of the study, nearly one-third (31%) shared the video after viewing it in the lab. Sharing behavior correlated with pretest measures of tendency to share, $r = .26$, p

< .001, topic relevance, $r = .14$, $p = .007$, and empathy, $r = .10$, $p = .04$. Further, reported sun safety behaviors performed in the week following message exposure correlated with past sun safety behavior, behavior intentions, gender, empathy, topic relevance, and message-generated emotional intensity ($ps < .05$). Each of these variables was considered as a possible covariate and was retained in the analyses if significant at $p < .05$. Finally, 10% of participants indicated either having seen the video before or being unsure whether they had seen it or not. Given there were no differences between those who had versus had not seen *Dear 16 Year-Old Me* before in their sun safety attitudes, intentions, or behaviors or in whether they shared the video ($ps > .10$), all participants were retained for analyses.

Missing data (primarily the reporting of gender and race) was rare, affecting only .026% of cases. As such, listwise deletion procedures were implemented in all analysis. Initial data screening for violations of normal distribution, multicollinearity, and homogeneity of variance did not reveal any issues of concern.

Social Sharing and Health Behavior Change

H1 predicted that those who shared a health-related video on social media would be more likely to engage in the recommended health behavior than those who did not. An ANCOVA with sharing the video during the study as the predictor and sun safety behaviors in the subsequent week as the dependent variable (controlling for past sun safety behavior and sun safety intentions) indicated a significant difference between those who shared the

video and those who did not. Specifically, those who shared the video to Facebook immediately after viewing ($M = 2.09$, $SD = 1.44$) reported a significantly greater number of sun safety behaviors during the following week than those who did not ($M = 1.37$, $SD = 1.25$), $F(1, 372) = 10.71$, $p = .001$, $\eta^2 = .028$. Thus, H1 is supported, providing evidence for self-persuasion as a result of message sharing.

Emotional Arousal and Message Sharing

H2 predicted that emotional intensity would positively correlate with message sharing. Controlling on topic relevance, tendency to share, and empathy, those who experienced stronger emotional arousal in response to the video messages were more likely to share the video immediately after viewing, $r_p(370) = .13$, $p = .003$. Thus, H2 is supported.

Of note, when examining individual emotion items, the two that significantly related to sharing at $p < .05$ were hope, $r_p(369) = .13$, $p = .01$, and inspired, $r_p(365) = .12$, $p = .02$. Thus, it appears not only that emotional intensity, but hopeful feelings specifically, generated message sharing.

Message Features and Social Sharing

H3-5 ask whether the inclusion or exclusion of (a) sad content, (b) humorous content, or (c) a directive to share the message would generate greater message sharing behavior. An ANCOVA was performed with the three message manipulations as the predictor variables, message sharing during the study as the dependent variable, and topic relevance and tendency to share messages as significant covariates. A significant main

effect for the sadness manipulation emerged, $F(1, 364) = 4.85, p = .028, \eta^2 = .013$, indicating that those who viewed the video with the very sad personal stories ($M = .37, SD = .48$) were more likely to share the video than those who did not ($M = .26, SD = .44$). No other significant main effect or two-way interactions emerged. However, a three-way interaction of sad story, sharing directive, and humor emerged, $F(1, 364) = 4.64, p = .032, \eta^2 = .013$, suggesting that those who saw the video with all three elements (43%) or with just the sad stories (41%) were most likely to share whereas those who saw the video without all three elements were the least likely to share (16%).

Modeling the Effects of Message Sharing on Behavior

The evidence above suggests that sharing a video to Facebook – regardless of feedback from others – increases the likelihood of acting in ways consistent with that posted message. To determine where message sharing fits within the broader picture of predicting health behavior and how message features or reactions influence sharing within this broader context, a path model was developed to visualize the dynamics at play.

First, we identified eight significant predictors of sun safety behaviors at $p < .05$ among the set of variables assessed in the study: past behavior, behavioral intentions, message sharing, gender (0 = male, 1 = female), empathy, topic relevance, emotional intensity, message processing depth, and self-efficacy. We then identified six significant predictors of message sharing at $p < .05$: topic relevance, tendency to share, sad condition (0 =

no, 1 = yes), emotional intensity, message processing depth, and self-efficacy.

Based on these analyses, both emotional intensity and message processing depth, along with self-efficacy, played potentially meaningful roles in the dynamic between message sharing and related behavior. To better understand the relationships among these variables, we constructed a path model in AMOS 23.0 with error terms for each exogenous variable set at 1. The goodness of fit criteria used were: (1) a χ^2/df ratio of 5 or less, (2) a comparative fit index (CFI) of .90 or greater, as close to 1 as possible, and (3) a root mean square error (RMSEA) less than or equal to .06. Variable order was determined based on measurement timing (pretest variables before posttest variables) as well as theoretical relationships (e.g., message processing preceding self-efficacy). We began with the relationships noted above. We then added additional predictors of behavioral intentions, message processing depth, and emotional intensity based on additional regressions similar to those outlined above. Non-significant paths at $p < .05$ were removed.

The final model evidenced a good fit to the data, $\chi^2/df = 1.36$, $p = .08$, CFI = .985, RMSEA = .031 (see Figure 1). Further, the model explained 14% of the variance in message sharing behavior, and 30.4% of the variance in sun safety behavior. Specifically, the model suggests that message sharing predicted sun safety behavior directly ($\beta = .16$, $p < .001$; $B = .47$, $SE = .13$) as well as indirectly via behavioral intentions ($\beta = .08$, $p = .04$; $B = .22$, $SE =$

.11). Message sharing was, in turn, directly enhanced by emotional intensity ($\beta = .15, p = .003; B = .06, SE = .02$), self-efficacy ($\beta = .13, p = .008; B = .05, SE = .02$), and seeing a message containing heart-wrenching stories of loss ($\beta = .11, p = .03; B = .11, SE = .05$). As well, emotional intensity indirectly influenced message sharing via message processing depth and self-efficacy. That is, not only did emotional intensity generate sharing directly, but it led to closer message processing, increased self-efficacy, and in turn, message sharing. In essence, this model supports the previously reported results that message sharing predicted sun safety behavior over the course of the next week, and emotional intensity as the most notable predictor of message sharing.

Discussion

Given the limited research on social media use and self-persuasion, the purpose of this study was to examine the influence of sharing a health message with others via social media channels on the message poster's own health behavior. As expected, message sharers were more likely than non-sharers to follow the posted message's recommendations over the next week, and this modest relationship persisted even after accounting for key variables that typically predict health behavior (e.g., intentions, self-efficacy, past behavior, perceived susceptibility, etc.). As such, this research provides unique evidence that actual message posting on social media likely has implications for the message sharer's own future health behavior. This documented self-persuasion via message posting is consistent with cognitive

dissonance theory (see Valkenburg, 2017) in that expressed attitude via message posting resulted in subsequent health behavior change in line with message recommendations.

Focusing on the message features that promoted health message sharing, as expected based on past literature (e.g., Bell & Sternberg, 2001; Berger & Milkman, 2012; Nelson-Field et al., 2013), emotional intensity served as a small, though significant direct predictor of message sharing. Importantly, emotional intensity also evidenced indirect influence via its moderately-sized impact on message processing depth and, in turn, sun safety self-efficacy. Thus, not only might people be moved to share emotionally arousing messages, but such messages may also encourage deeper cognitive engagement. If such engagement, in turn, boosts perceptions of self-efficacy, people may be further encouraged to share the message with others. Thus, the decision to share is likely not simply driven directly by emotional arousal as the extant literature suggests but by other, down-stream, cognitively-based factors as well.

Of the message manipulations, only the sadness manipulation evidenced a small, direct influence on message sharing. This result echoes Myrick and Oliver (2014), who found the same video with the sad content boosted willingness to share. An important difference, however, is that our findings suggest that emotional intensity generally, and hope specifically, predicted sharing, rather than compassion, as noted by Myrick and Oliver. This difference may be a function of the different samples (MTurk

participants vs. undergraduates), different methodologies (on-line vs. laboratory experiment), or different measures (willingness to share vs. actual message posting). Still, given both hope and compassion are positively experienced emotions that arise in the face of difficulties (Lazarus, 1991), it seems that sad content can promote the experience of emotions that generate prosocial behavior, including sharing a message that may benefit others.

This finding may, in fact, explain why the humor manipulation did not affect message sharing. If sharing was enhanced due to feelings of hope or compassion, then perhaps a ceiling effect existed, leaving little room for amusement to boost sharing. Another, perhaps more likely, possibility is that the humor was not central to the message's core themes, appearing mostly at the beginning of the message with brief, sporadic appearances afterwards and serving more to engage the viewer and ease tension than to convey important points. Thus, any possible benefit of humor was likely overridden by the later content.

Especially interesting, the directive to share did not meaningfully influence message sharing in any direct or indirect way. Perhaps such directives are now so common that they are not especially noticed. Or perhaps the video was powerful enough emotionally that it did not need the directive to boost sharing behavior. Indeed, the video has previously gone viral, racking up over 10 million views on YouTube. Given this was the first test, to our knowledge, of manipulating directives to share messages, it

would be worthwhile to consider the conditions under which such directives might have influence, for example, within messages that may not lend themselves to evoking hope or compassion, may be more uncomfortable to watch, or may be less normative to share.

Still, the use of the three message elements (humor, sad story, sharing directive) did have strong influence on sharing behavior. Overall, 31% of the participants shared the video, which is both three times greater than average health message sharing (Fox, 2011) and three times greater than the number of participants in the study who tended to share news content once a week or more (10%). Further, the condition in which all three elements were included and the condition that included just the sad stories demonstrated nearly three times the level of sharing as the condition that contained none of these elements. One might argue that the latter message was shorter and thus less impactful. However, given the central role of emotionality, which is not itself a function of message length, it is more likely that the message elements themselves moved audiences in ways that generated message sharing that might not otherwise have occurred. In essence, when it comes to message sharing, the nature of the message content and not just the topic matters.

Study Limitations

This study's findings should be interpreted within the context of its potential limitations. First, we relied on natural motivation to share messages rather than assign participants to a forced sharing condition. This

emphasis on choice was important to both sustain external validity and adhere to a fundamental condition of dissonance theory—that the behavior be voluntary. As such, one might suggest that those who shared the message were also more motivated to engage in the sun safety behaviors assessed after message exposure for reasons other than their sharing behavior. Although this is a possibility, we controlled on a wide range of variables that could potentially explain the link between message sharing and behavioral motivation (e.g., demographics, past sun safety behavior, topic relevance, perceived susceptibility, family history of skin cancer, message processing variables, etc.) Even accounting for these variables, the sharing-sun safety behavior relationship held. It is possible that an unmeasured variable might correlate with both sharing and sun safety behavior. But given, all things being equal, past behavior is the best predictor of future behavior and given we controlled on both past sun safety behavior and typical message sharing behavior, we believe this possibility is unlikely. Instead, we suggest the emotional arousal generated by the messages was critical to promoting message sharing, and that message sharing explained unique variance in later sun safety behavior.

Relatedly, an arguable limitation of this study is the lack of a control group to whom the sharers' and non-sharers' behavior could be compared. That is, one might argue that differences in behavior between the sharers and non-sharers are a function of demand characteristics, especially given the self-reported nature of behavior. However, given all participants

completed identical surveys and experienced identical experimental procedures, any differences detected can only be attributed to the differences in sharing behavior and/or the version of the video viewed. Further, given our research question was how sharing, or not sharing, a health video influences later health behavior, any condition that does not include a video would not aid in answering this key question. Still, we cannot rule out the possibility that our results are amplified, or muted, as a result of the experimental context. Thus, application in more naturalistic settings with more diverse audiences would be most useful.

It might also be argued that given the message manipulations resulted in videos of different lengths, that message length, not posting, might explain our findings. However, given each manipulation was of similar length and given the videos with the sad stories tended to be shared more, despite ranging in time from 3:44 to 4:51 minutes, it is unlikely that the length itself, but rather the emotional content, is the better explanation for our findings.

Finally, we wish to note that though the data were collected in 2014, the platform used in this study, Facebook, has only grown in usership, with an increase in over 800,000 monthly users between 2014 and 2018. Given the psychological process underlying the effects of sharing via Facebook are likely to be stable over time, the findings reported are likely to be applicable as long as the social media environment endures as such.

Practical Implications

Assuming the validity of the reported results, there are several practical implications of this research. First, those wishing to promote audience health behavior may consider adopting the strategy of encouraging target audiences to post messages to their preferred social media platforms. By “recruiting” participants to diffuse their message, they may generate the desired health behaviors while incurring minimal resistance given the indirect nature of the persuasive intervention. Second, to promote message sharing, health advocates should consider emotionally evocative messages, particularly those that evoke emotions of hope or compassion. Such emotions are more comfortable to experience than the fear often associated with health-based messages and may be desirable for audiences to share with their social networks. Finally, given self-efficacy to perform a behavior generated greater message sharing, messages that work to increase audience self-efficacy may not only facilitate the audience’s performance of the behavior via behavioral intentions but via the mechanism of self-persuasion as well.

Future Research Directions

This study opens up several avenues for future research. First replicating these findings in other contexts, both health-related and otherwise, is essential. This is especially important as there may be factors associated with health messages that may limit their sharing, even if emotionally-evocative. For example, messages on topics seen as “stigmatizing” (e.g., sexual health) limit social sharing with existing social

networks (Byron, Albury, & Evers, 2013).

Second, though we presume dissonance processes explain our findings, it is possible that other psychological states—like feelings of accountability to one’s social network, the size of an individual’s network, or self-presentation concerns that arise from public posting— are operational when people post to social media. These factors should be taken into account in the future study of the self-persuasive effect of message posting.

Third, though emotional intensity proved important as expected, additional investigation revealed that feeling hopeful and inspired were the key motivators underlying the sharing behavior, despite these emotions not being the strongest experienced by participants. This combination of findings suggests audiences who not simply believed, but *felt*, the message would be of benefit to others were motivated to share. Exploring how the prosocial nature of emotions influences health message sharing would be a useful direction for future research. Relatedly, though this research did not find humor to boost sharing, it could well be that humorous elements that evoke stronger, more relevant amusement, especially toward the end of a message, might boost sharing in other contexts. Future research would do well to continue exploring how to best structure positive health messages to promote message sharing.

Fourth, as demonstrated in the path model, emotional arousal appeared to enhance message processing depth, which in turn influenced message sharing through its impact on self-efficacy. Although not all

messages will always follow similar processes, these data highlight that emotional arousal can boost sharing directly as well as indirectly through more cognitively-oriented processes. This finding is supported by the sharing literature in that emotion-laden stories are shared, in part, to help make sense of the world, which requires some cognitive effort (Rimé, 2007). If sharing is based, in part, on more cognitively-driven processes, this may help to explain why sharing behavior can enhance health behavior over time and hints that any dissonance processes engaged may be augmented by other influence mechanisms, like cognitive elaboration or reasoned action. Greater attention to these underlying processes of influence would be most welcome.

To conclude, this study offers credible evidence of both theoretical and practical import. Theoretically, we suggest that the boundaries of the hypocrisy paradigm can be expanded to social media posting behavior and that influence occurs not simply as a temporary priming effect but as a result of a more enduring motivational process. Given the pervasive use of social media, the practical value of this approach to behavior promotion in a range of contexts must not be underestimated. That is, not only might we focus on the content of messages to promote desired behavior but if that content generates social sharing, it may influence not only those in the social network, but enhance the effect on the target audience itself. In sum, when audiences become advocates, persuasive effects may be enhanced.

References

- Atkin, C. K., & Rice, R. E. (2013). Theory and principles of public communication campaigns. In R. E. Rice & C. K. Atkin (Eds.) *Public communication campaigns*. (pp. 3-19). Thousand Oaks, CA: Sage.
- Bell, C., & Sternberg, E., (2001). Emotional selection in memes: The case of urban legends. *Journal of Personality & Social Psychology*, *81*, 1028-1041. doi:10.1037/0022-3514.81.6.1028
- Berger, J., & Iyengar, R. (2013). Communication channels and word of mouth: How the medium shapes the message. *Journal of Consumer Research*, *40*, 567-579. doi:10.1086/671345
- Berger, J., & Milkman, K. L. (2012). What makes online content viral? *Journal of Marketing Research*, *49*, 192-205. doi:10.1509/jmr.10.0353
- Bond, R. M., et al. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, *489*, 295-298. doi:10.1038/nature11421
- Botha, E. (2014). A means to an end: Using political satire to go viral. *Public Relations Review*, *40*, 363-374. doi:10.1016/j.pubrev.2013.11.023
- Byron, P., Albury, K., & Evers, C. (2013). "It would be weird to have that on Facebook": Young people's use of social media and the risk of sharing sexual health information. *Reproductive Health Matters*, *21*(41), 35-44. doi:10.1016/S0968-8080(13)41686-5
- Cappella, J. N., Kim, H. S., & Albarracín, D. (2015). Selection and transmission processes for information in the emerging media environment:

- Psychological motives and message characteristics. *Media Psychology*, 18(3), 396-424. doi: 10.1080/15213269.2014.941112
- Carr, C. T., & Hayes, R. A. (2017). Identity shift effects of self-presentation and confirmatory and disconfirmatory feedback on self-perceptions of brand identification. *Media Psychology*. doi: 10.1080/15213269.2017.1396228
- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology*, 10(85).
- Dickerson, C. A., Thibodeau, R., Aronson, E., & Miller, D. (1992). Using cognitive dissonance to encourage water conservation. *Journal of Applied Social Psychology*, 22, 841-854. doi:10.1111/j.1559-1816.1992.tb00928.x
- Dunlop, S. M., Kashima, Y., & Wakefield, M. (2010). Predictors and consequences of conversations about health promoting media messages. *Communication Monographs*, 77, 518-539. doi:10.1080/03637751.2010.502537
- Eckler, P., & Bolls, P. (2011). Spreading the virus. *Journal of Interactive Advertising*, 11(2), 1-11. doi:10.1080/15252019.2011.10722180
- Eisend, M. (2009). A meta-analysis of humor in advertising. *Journal of the Academy of Marketing Science*, 37(2), 191-203. doi:10.1007/s11747-008-0096-y
- Festinger, L. (1957). *A Theory of Cognitive Dissonance*. California: Stanford University Press.

- Flanagin A. J., & Metzger, M. J. (2001). Internet use in the contemporary media environment. *Human Communication Research, 27*, 153-81. doi:10.1111/j.1468-2958.2001.tb00779.x
- Fox, S. (2011). *The social life of health information*. Washington, DC: Pew Research Center.
- Geusens, F., & Beullens, K. (2017). The reciprocal associations between sharing alcohol references on social networking sites and binge drinking: A longitudinal study among late adolescents. *Computers in Human Behavior, 73*, 499-506. doi:10.1016/j.chb.2017.03.062
- Geusens, F., & Beullens, K. (2018). A longitudinal examination of the moderating influence of peer and parental socialization on alcohol-related social media self-effects among late adolescents. *Media Psychology*. doi:10.1080/15213269.2018.1476159
- Gonzales, A. L., & Hancock, J. T. (2008). Identity shift in computer-mediated environments. *Media Psychology, 11*, 167-185. doi:10.1080/15213260802023433
- Grajales III, F. J., Sheps, S., Ho, K., Novak-Lauscher, H., & Eysenbach, G. (2014). Social media: A review and tutorial of applications in medicine and health care. *Journal of Medical Internet Research, 16*(2), e13. doi:10.2196/jmir.2912
- Guadagno, R. E., Rempala, D. M., Murphy, S., & Okdie, B. M. (2013). What makes a video go viral? An analysis of emotional contagion and Internet memes. *Computers in Human Behavior, 29*, 2312-2319.

doi:10.1016/j.chb.2013.04.016

Harber, K. D., & Cohen, D. J. (2005). The emotional broadcaster theory of social sharing. *Journal of Language and Social Psychology, 24*, 382-400. doi:10.1177/0261927x05281426

Ho, J. Y. C., & Dempsey, M. (2010). Viral marketing: Motivations to forward online content. *Journal of Business Research, 63*, 1000-1006.

doi:10.1016/j.jbusres.2008.08.010

Korda, H., & Itani, Z. (2013). Harnessing social media for health promotion and behavior change. *Health Promotion Practice, 14*, 15-23. doi:

10.1177/1524839911405850

Kubey, R. W., & Peluso, T. (1990). Emotional response as a cause of interpersonal news diffusion: The case of the space shuttle tragedy. *Journal of Broadcasting & Electronic Media, 34*(1), 69-76.

doi:10.1080/08838159009386726

Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.

Mitchell, A., Gotfried, J., Barthel, M., & Shearer, E. (2016). *The modern news consumer*. Washington, DC: Pew Research Center

Moorhead, S. A., Hazlett, D. E., Harrison, L., Carroll, J. K., Irwin, A., & Hoving, C. (2013). A new dimension of health care: Systematic review of the uses, benefits, and limitations of social media for health communication. *Journal of Medical Internet Research, 15*(4), e85.

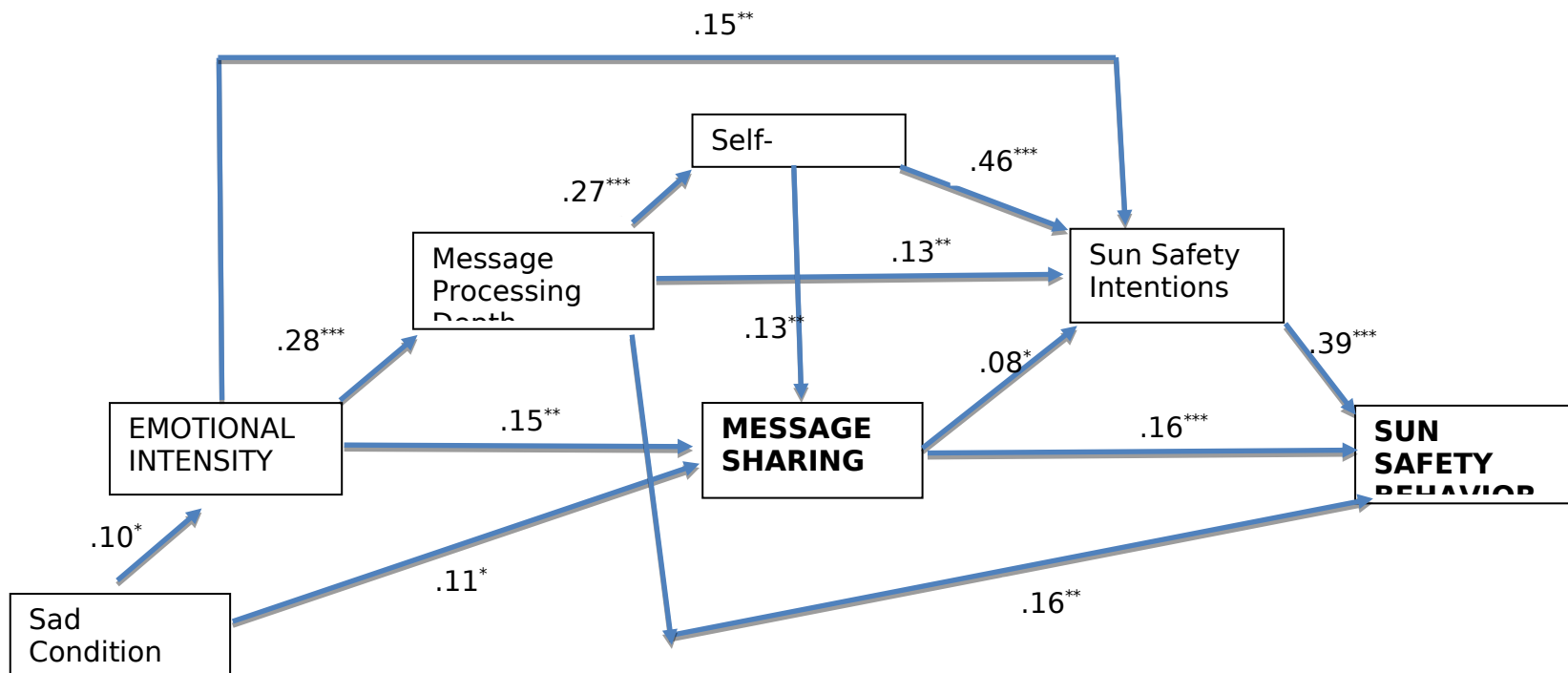
doi:10.2196/jmir.1933

- Myrick, J. G., & Oliver, M. B. (2014). Laughing and crying: Mixed emotions, compassion, and the effectiveness of a YouTube PSA about skin cancer. *Health Communication, 30*, 820-829.
doi:10.1080/10410236.2013.845729
- Nabi, R. L. (2016). Laughing in the face of fear (of disease detection): Using humor to promote cancer self-examination behavior. *Health Communication, 31*, 873-83. doi:10.1080/10410236.2014.1000479
- Nelson-Field, K., Riebe, E., & Newstead, K. (2013). The emotions that drive viral video, *Australasian Marketing Journal, 21*, 205-211.
doi:10.1016/j.ausmj.2013.07.003
- Oostveen, A.-M. (2011). The internet as an empowering technology for stigmatized groups: A case study of weight loss bloggers. *SSRN Electronic Journal, 114-119*. doi:10.2139/ssrn.2003129
- Rains, S. A., & Keating, D. M. (2011). The social dimension of blogging about health: Health blogging, social support, and well-being. *Communication Monographs, 78*, 511-534. doi:10.1080/03637751.2011.618142
- Rimé, B. (1995). The social sharing of emotion as a source for the social knowledge of emotion. In J. A. Russell et al. (Eds.), *Everyday conceptions of emotion: An introduction to the psychology, anthropology, and linguistics of emotion*. (pp. 475-489). Dordrecht, The Netherlands: Kluwer Academic Publishers. doi:10.1007/978-94-015-8484-5_27
- Rimé, B. (2007). The social sharing of emotion as an interface between

- individual and collective processes in the construction of emotional climates. *Journal of Social Issues*, *63*, 307-322. doi:10.1111/j.1540-4560.2007.00510.x
- Rimé, B., Mesquita, B., Philippot, P., & Boca, S. (1991). Beyond the emotional event: Six studies on the social sharing of emotion. *Cognition and Emotion*, *5*, 435-465
- Scholz, C., Baek, E., O'Donnell, M. B., Kim, H. S., Cappella, J. N., & Falk, E. B. (2017). A neural model of valuation and information virality. *Proceedings of the National Academy of Sciences*, *114*(11), 2881-2886.
- Sood, A., Sarangi, S., Pandey, A., & Murugiah, K. (2011). YouTube as a source of information on kidney stone disease. *Urology*, *77*, 558-562. doi:10.1016/j.urology.2010.07.536
- Stone, J., & Fernandez, N. (2011). When thinking about less failure causes more dissonance: The effect of elaboration and recall on behavior change following hypocrisy. *Social Influence*, *6*, 199-211. doi:10.1080/15534510.2011.618368
- Stone, J., Wiegand, A. W., Cooper, J., & Aronson, E. (1997). When exemplification fails: Hypocrisy and the motive for self-integrity. *Journal of Personality and Social Psychology*, *72*(1), 54-65. doi:10.1037/0022-3514.72.1.54
- Taylor, D. G., Strutton, D., & Thompson, K. (2012). Self-enhancement as a motivation for sharing online advertising. *Journal of Interactive Advertising*, *12*(2), 13-28. doi:10.1080/15252019.2012.10722193

- Valkenburg, P. M. (2017). Understanding self-effects in social media. *Human Communication Research, 43*(4), 477–490. doi: 10.1111/hcre.12113
- van Koningsbruggen, G. M., Hartmann, T., Eden, A., & Veling, H. (2017). Spontaneous hedonic reactions to social media cues. *Cyberpsychology, Behavior, and Social Networking, 20*(5), 334–340. doi:10.1089/cyber.2016.0530
- Webb, T. L., Joseph, J., Yardley, L., & Michie, S. (2010). Using the internet to promote health behavior change: A systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research, 12*(1), e4. doi:10.2196/jmir.1376
- Wolski, S., & Nabi, R. L. (2000, June). Message processing quality: Confirmatory analysis of an elaboration depth measure. Paper presented at the 50th Annual Conference of the International Communication Association, Acapulco, Mexico
- Ziebland, S., & Wyke, S. (2012). Health and illness in a connected world: how might sharing experiences on the internet affect people's health? *The Milbank Quarterly, 90*, 219–49. doi:10.1111/j.1468-0009.2012.00662.x

Figure 1

Path Model of Role of Message Sharing on Sun Safety Behaviors

Notes: $\chi^2/df = 1.36$, $p = .08$, CFI = .985, RMSEA = .031. * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized Betas are reported. All relationships control for past sun safety behaviors, topic relevance, empathy, race, and frequency of message sharing. All variables were assessed during the initial lab session except sun safety behavior. R^2 message sharing = 14%; R^2 sun safety behavior = 30.4%.

