The Message Influences Me More Than Others:

How and Why Social Media Metrics Affect First Person Perception and Behavioral Intentions

Citation:

Chung, M. (2019). The message influences me more than others: How and why social media metrics affect first person perception and behavioral intentions. *Computers in Human Behavior, 91*, 271-278. https://doi.org/10.1016/j.chb.2018.10.011

Abstract

Two experiments investigated how and why social media metrics affect perceived media influence and behavioral intentions. In the first experiment (N = 241), those who viewed a news article about an environmental risk with social media metrics (vs. news article only) reported greater media influence on the self than others (First-person perception, FPP), and such effect was more prominent among those high in the need to belong. Increased FPP, in turn, led to greater intentions to combat the risk. The second experiment (N = 210) found that exposure to a news article about a health risk with high (vs. low) social media metrics led the readers to perceive greater injunctive norms and thereby report greater FPP. Such effect was more prominent among those high in the need for closure. Increased FPP induced stronger behavioral intentions to prevent the risk as well as to share the news article via social media.

Keywords: Social media metrics, First-person perception, Injunctive norms, Behavioral intentions, Need to belong, Need for closure

The Message Influences Me More Than Others:

How and Why Social Media Metrics Affect First Person Perception and Behavioral Intentions

1. Introduction

Online content providers have increasingly incorporated technological tools designed to allow users to express their opinions about specific media content and related issues. Social media sharing buttons are one of such tools. People press the buttons to share media content that they think important or interesting, and the system generates the number of times the content was shared (i.e., social media metrics). As such, social media metrics serve as a powerful cue to popularity or virality of specific media content (Stavrositu & Kim, 2014; Lee-Won, Abo, Na, & White, 2016).

Prior research suggested that social media metrics influence individuals' message processing and decision making such as news selection (Knobloch-Westerwick, Sharma, Hansen, & Alter, 2005; Messing & Westwood, 2014), news evaluation (Chung, 2017), and behavioral intentions (Lee-Won et al., 2016). Although these studies highlighted intriguing psychological implications of social media metrics, little is known about how social media metrics shape the way people estimate the influence of media content on the self and others. Few studies examined the effect of social media metrics through the lens of third-person effect, but the findings are inconsistent; while one study (Stavrositu & Kim, 2014) found that high social media metrics (i.e., large number of sharing via social media) eradicated presumption of greater media influence on others than the self, such finding was not observed in other studies (Antonopoulos, Veglis, Gardikiotis, Kotsakis, & Kalliris, 2015; Kim, 2018).

At the same time, psychological processes underlying the effect of social media metrics on self-other discrepancy in media influence presumption remains to be specified. Although it

has been speculated that high social media metrics may communicate norms involving what people should do and thus foster individuals' desire to join the normative majority (i.e., bandwagon effect; Simon, 1954) as well as decrease the social distance between the self and others (Stavrositu & Kim, 2014), the association between social media metrics, perceived norms, and self-other discrepancy in judging media influence has not been empirically tested. It is also not known what factors, such as individuals' cognitive tendency, determine the strength of the social media metrics effect.

To fill these research gaps, the current study advances extant literature in the following aspects. First, given that prior works examining the social media metrics effect on perceived media influence yielded inconsistent findings, this study purported to clarify how social media metrics shape individuals' perception of media influence and subsequent behavioral intentions. In so doing, two experiments with different topics were conducted to enhance robustness and generalizability of the findings. Second, this study directly tested the injunctive norms (i.e., what is approved by others; Cialdini, Kallgren, & Reno, 1991) mechanism to identify psychological processes by which social media metrics shape perceptual self-other discrepancy. Lastly, this study addressed the question of how individuals' need to be affiliated with and accepted by group members (i.e., need to belong) and need for a definite answer (i.e., need for closure) might moderate the strength of the social media metrics effect on perceived media influence and perceived injunctive norms, respectively.

2. Literature Review

2.1. Perceived Media Influence on the Self and Others

Third-person perception (TPP) refers to a well-documented tendency to presume greater influence of media messages on others than the self (Davison, 1983). For instance, majority of

U.S. adults believed that pornography exerts greater influence on others than themselves (Gunther, 1995). Likewise, when asked to estimate the effects of violent or misogynistic lyrics from rap music, people perceived that others were more easily influenced by the lyrics than themselves (McLeod, Eveland, & Nathanson, 1997). A meta-analysis of 372 effect sizes from 106 studies showed that TPP is a robust phenomenon, with an average effect size of $d = .646$ ($r = .307$) (Sun, Shen, & Pan, 2008).

However, people do not always estimate greater media influence on others than the self. In certain situations, people tend to estimate greater media effects for themselves than for others. This phenomenon, known as first-person perception (FPP), is normally observed when people perceive the media message to be socially desirable. For example, those exposed to violent media content presumed greater media influence on others than the self, exhibiting classic TPP, whereas those exposed to a public service announcement perceived greater media influence on the self than others (Innes & Zeitz, 1988). Similarly, exposure to product commercials that were judged to be pleasant and moving led participants to presume greater influence of the commercial on the self than others (Gunther & Storey, 2003). In the context of this study, the stimulus news articles address an environmental risk (climate change) and a health risk (Norovirus) and suggest measures to prevent the risks. Given that such articles aim to provide people with helpful information, the messages may be perceived socially desirable and thereby generally produce perception of greater media influence on the self than others (i.e., FPP).

H1: Participants will perceive the news article to have greater influence on the self than others.

The fundamental premise of the self-other gap in media influence is a lack of knowledge about how others think about a specific media content (Lee & Jang, 2010). In the traditional

media context (i.e., reading newspapers or watching television news), audiences did not have any direct information about how others think about the media content. However, with online news services increasingly integrate multiple interactive features, news consumers can now learn how others react to the media content. This information removes audiences' ignorance about others' thoughts, and thus may profoundly alter the formation of media influence perception.

Indeed, studies found that various forms of audience reactions alter perceived influence of media on the self and others (Chen & Ng, 2015; Chung, Munno, & Moritz, 2015; Lee & Jang, 2010). For example, those who saw more people disapproving than approving the news article (vs. news article only) assumed less media influence on general public, although such effect was observed only for those who are more inclined to engage in analytical thinking (Lee & Jang, 2010). In another study (Chung et al., 2015), those who read a news article without user comments reported classic TPP (i.e., others were more negatively affected by the article than the self), but TPP disappeared when the article was accompanied by user comments. Extending this line of research, this study examines if social media metrics, as another important form of audience reaction, also affect perceived media influence, and if so, how and why.

2.2. Social Media Metrics and Perceived Media Influence

Sharing media content via social media is a social experience (Lee & Ma, 2012). People often share media content that they think interesting or important with an intention to spread the content across their social networks and to encourage others' interests in or discussion on the content (Fox, Cruz, & Lee, 2015; Oeldorf-Hirsch & Sundar, 2015). The website aggregates such sharing and generates social media metrics – the number of times a

specific media content has been shared via social media. Displayed alongside the media content, this machine-generated number provides cues about others' exposure to as well as positive attitudes toward the media content (Stavrositu & Kim, 2014).

Being aware that others are interested in or endorse certain media content may alter the way people estimate the influence of the content. Specifically, it is possible that a large number of social media sharing would yield perception of greater media influence on the self than others. That is, the fact that many people have shared the content via social media may signal that the content was widely accepted by others. This information, in turn, may make individuals to approve the content and thus perceive greater media influence on themselves. Bandwagon effect, a well-documented psychological phenomenon whereby people do something following others' action regardless of their own beliefs (Simon, 1954) provides a theoretical explanation for this prediction. Bandwagon effect postulates that when many people endorse a certain stance or object, individuals tend to take it as an indicator of acceptance and thus are more likely to follow the trend (i.e. "If many people think this story is important, I should think so, too.").

Indeed, studies found the bandwagon effect stemming from exposure to social media metrics. For example, those who read a news article accompanied by social media metrics (vs. news article only) evaluated the article to be of higher quality, albeit such effect was limited to individuals with high personal relevance to the focal issue (Chung, 2017). Similarly, exposure to a blog post about the need of bone marrow donors with high (vs. low) social media metrics induced greater intention to join a bone marrow registry (Lee-Won et al., 2016). Directly relevant to this study, Stavrositu and Kim (2014) found that those who read a news article with high social media metrics believed that the self is influenced by the article to a similar degree

with others. These findings suggest that social media metrics may function as a cue to the acceptance level of a media content and thereby drives individuals to "jump on the bandwagon."

H2: When the news article is accompanied by high (vs. low) social media metrics, people will presume greater media influence on the self than others.

Despite previous findings that demonstrated the bandwagon effect triggered by social media metrics (Chung, 2017; Messing & Westwood, 2014; Lee-Won et al., 2016; Stavrositu & Kim, 2014), psychological mechanisms underlying such effect remain to be examined. One possibility is that injunctive norms mediate the effect of social media metrics on perceived media influence, because audience reactions often provide meaningful cues to injunctive norms – people's beliefs regarding what is approved by others and what ought to be done (Cialdini et al., 1991). In the context of this study, social media metrics may signal that many people believe the focal issue is important and the recommended actions in the article ought to be taken. This perception of injunctive norms, in turn, may lead individuals to join the normative majority and believe that they are influenced by the media message more than others.

H3: The association between social media metrics and FPP (H2) will be mediated by perceived injunctive norms.

Perceived discrepancy in media influence on the self and others has behavioral consequences. The behavioral outcomes generally fall into two categories - defiance and compliance (Perloff, 1999). Prior research found that people take defiant actions to prevent presumed undesirable media influence on others. For example, presuming that misogynic rap lyrics would have negative impact on other students, college students supported censorship of such content to counteract the impact (McLeod et al., 1997). In contrast, when people perceive desirable media influence on the self, this perception may induce compliant

actions. For instance, when people perceived that the millennium bug (Y2K) news had a greater influence on themselves than others, they were more likely to take precautionary actions to prevent Y2K (Tewksbury, Moy, & Weis, 2004). Similarly, those who reported greater perceived influence of avian flu news on the self (vs. others) reported stronger intentions to seek more information about flu risks and to get vaccinated (Wei, Lo, & Lu, 2008). In this vein, it is plausible to expect that increased FPP as a result of the social media metrics effect would increase behavioral intentions to adopt preventive measures recommended in the news article.

H4: Increased FPP will lead to stronger preventive behavioral intentions.

Another potential behavioral outcome of the social media metrics effect is social sharing intentions. Previous research showed that people are more likely to share news stories with which they agree (Arceneaux, Johnson, & Murphy, 2012; Chung et al., 2015) or they think interesting and important (Fox et al., 2015). In the context of the current study, estimation of greater media influence on the self than others may reflect a certain degree of acceptance of the media content, and such acceptance may trigger intention to share the media content. This reasoning is in line with a finding that individuals are less likely to share a news story via social media when they perceive greater effect of the story on others (Chung et al., 2015). However, no study up to date has examined if social media metrics influence individuals' social sharing intentions, and if so, how. Thus, the following hypothesis is proposed:

H5: Increased FPP will lead to stronger social sharing intentions.

2.3. Need to Belong and Need for Closure: Potential Moderators

The effect of social media metrics on perceived injunctive norms, perceived media influence, and subsequent behavioral intentions may not be uniformly observed. For instance, if the power of social media metrics stems from the bandwagon effect, those who has stronger need

to form and maintain lasting, positive, and significant interpersonal relationship (i.e., need to belong; Baumeister & Leary, 1995) would be more susceptible to the influence of social media metrics as compared to those with lower need to belong. That is, those high in the need to belong may pay closer attention to social media metrics as they want to know what others approve or believe to be important (i.e., injunctive norms) and conform to the majority. Consequently, they are more likely to be influenced by social media metrics when evaluating media influence on the self and others. In contrast, those low in the need to belong may be less likely to care about what others think and thus less influenced by social media metrics. Albeit in difference contexts, prior research found that individuals with strong (vs. weak) need to belong demonstrated enhanced sensitivity to social cues in a message (Pickett, Gardner, & Knowles, 2004). Another study also demonstrated that those high (vs. low) in the need to belong are more likely to jump on the bandwagon as they take others positive reaction as norms to follow (Cialdini et al., 1991). Thus, this study predicts that the need to belong would moderate the effect of social media metrics on FPP.

H6: The effect of social media metrics on FPP (H2) will be more pronounced among high than low need to belong individuals.

Another potential moderator of the social media metrics effect is the need for closure, a desire for a firm answer to a question and a readiness to close one's mind to alternatives (Kruglanski, 2004). It has been argued that high (vs. low) need for closure individuals are more likely to follow the dominant norms (Chao, Zhang, & Chiu, 2010; Fu et al., 2007; Kruglanski, 2004). For example, those with high (vs. low) need for closure demonstrated greater tendency to conform to perceived cultural norms when responding to conflicts (Chao et al., 2010). Likewise, high (vs. low) need for closure participants were more likely to uphold group norms (Kruglanski,

2004). As such, it is possible that people with high (vs. low) need for closure would be more susceptible to the social media metrics effect whereby high social media metrics function as injunctive norms.

H7: The effect of social media metrics on perceived injunctive norms (H3) will be more pronounced among high than low need for closure individuals.

3. Study 1

3.1. Method

3.1.1. Participants

A total of 241 participants (52 men, *M* age = 20.83, *SD* = 2.37) were recruited using the subject pool system at a large university in Singapore. The participants received extra credit for participating in this study. The imbalanced gender proportion reflects the male to female ratio in the subject pool. Participants were randomly assigned to one of the two conditions: social media metrics and news article only. A series of analysis of variance (ANOVA) and chi-square tests found no significant demographic difference between conditions, $p = .85$ (age), $p = .33$ (gender), $p = .42$ (ethnicity). Thus, randomization was deemed successful.

3.1.2. Design and Procedure

Upon providing consent, participants completed a pretest questionnaire that measured their need to belong, media use, and demographic information. Participants then read a news article with or without social media metrics. The article, titled “Climate change could make the earth uninhabitable,” started with a paragraph summarizing researchers' findings of how climate change negatively influences our lives. It then detailed the data regarding climate change and concluded with strategies individuals could adopt to combat climate change. The article was formatted as a feature on a fictitious environment news blog (*Figure* 1). In the social media

metrics condition, four icons (Facebook, Twitter, Google+, and email) were displayed underneath the article title as well as on the left bottom of the article. The icons displayed 2,823 shares in total. The specific number of social media metrics was determined by monitoring the typical number of high social media metrics in several news blogs (e.g., earthtimes.org, theguardian.com) over a three-day period. In the news article only condition, there were no icons and numbers displayed. After reading the stimuli, participants filled out the posttest questionnaire.

[Insert *Figure 1* Here]

3.1.3. Measures

To assess perceived influence of the news story on the self, participants were asked to indicate whether the story (a) had an influence on "you," (b) made "you" more concerned about climate change, and (c) made "you" to take climate change more seriously (1 = *Not at all*, 7 = *Very much*, M = 4.27, SD = 1.38, α = .95). Perceived influence on others was measured using the same three items, with "you" replaced by "others" (M = 4.28, SD = 1.24, α = .96). Then a FPP indicator was computed by subtracting perceived influence on others from perceived influence on the self (M = -0.02, SD = 1.02).

To measure behavioral intentions, participants rated their likelihood of engaging in the seven lifestyle strategies mentioned in the news story in the next 30 days (e.g., "how likely do you think you will set electronic equipment power down when not using them in the next 30 days?" 1 = *Not at all*, 9 = *Very much*). A higher mean score indicates stronger behavioral intentions to adopt the lifestyle strategies to combat climate change (M = 5.14, SD = 1.62, α = .87).

Need to belong was assessed using 10 items adopted from Leary, Kelly, Cottrell, and Schreindorfer (2013). Participants indicated to what extent they agreed with proposed statements (e.g., "I try hard not to do things that will make other people avoid or reject me," "I do not like being alone," 1 = *Strongly disagree*, 7 = *Strongly agree; M* = 4.57, *SD* = 0.96, α = .85).

3.2. Results

3.2.1. Manipulation Check

To confirm that the experimental manipulation performed as intended, participants were asked to indicate to what extent they agree with the following statement, "The news story had a lot of shares" (1 = *Strongly disagree*, 7 = *Strongly agree*). An independent sample t-test shows that participants in the social media metrics condition (*M* = 4.63, *SD* = 1.52) indicated that the news story had a significantly larger amount of shares than those in the news article only condition (*M* = 4.06, *SD* = 1.38), $t(239) = 3.04$, $p = .003$.

3.2.2. Hypothesis Tests

To test if participants perceive the news article generally have greater influence on the self than others (H1) and whether social media metrics increase FPP (H2), a 2 (Social media metrics: absence vs. presence) x 2 (Perceived influence: self vs. others) mixed model repeated measures ANOVA was performed. There was no main effect for self-other ratings in presumed media influence, $p = .91$. Although the data failed to support H1, participants presumed that the news articles influenced themselves (*M* = 4.27, *SD* = 1.38) and others (*M* = 4.28, *SD* = 1.24) to almost the same degree, suggesting that classic TPP was not at work. Also, there was a significant self-other ratings x social media metrics interaction effect, $F(1, 239) = 5.30$, $p = .02$, $\eta^2 = .02$. In the news article only condition, participants perceived that the news story has more influence on others (*M* = 4.41, *SD* = 1.17) than the self (*M* = 4.25, *SD* = 1.36) (i.e., classic TPP).

In contrast, when the article was accompanied with social media metrics, participants perceived that they are more influenced (M = 4.29, SD = 1.42) by the news story than others (M = 4.14, SD = 1.29), suggesting FPP (*Figure 2*). Hence, H2 was supported.

[Insert *Figure 2* Here]

To examine if FPP mediates the association between social media metrics and compliant behavioral intentions (H4), a simple mediation model was run using the PROCESS macro (Hayes, 2013, Model 4). Results suggest that the effect of social media metrics on behavioral intentions was mediated by FPP, indirect effect = 0.07, bootSE = 0.05, 95% bias-corrected 5000 bootstrap CI [.0042, 2057]. Specifically, FPP was positively associated with compliant behavioral intentions (b = 0.24, t = 2.31, p = .02). Controlling for the mediator, the effect of social media metrics on behavioral intentions became insignificant (b = 0.20, t = 0.99, p =.32), suggesting a full mediation via FPP. Thus, H4 was supported (*Figure 3*).

[Insert *Figure 3* Here]

H6 tested if the need to belong moderates the effect of social media metrics on FPP. A simple moderation was run using the PROCESS macro (Hayes, 2013, Model 1). FPP was regressed on social media metrics (IV: 0 = *News article only*, 1 = *Social media metrics*), need to belong, and their interaction term. While there was main effect of social media metrics on FPP, b = .30, t = 2.30, p = .02, need to belong, b = .20, t = .88, p = .40, and their interaction term, b = .13, t = .96, p = .34, did not have significant effect on FPP. However, when the estimated values of FPP were plotted at -1 SD, mean score, and +1 SD of the need to belong (M = 4.57, SD = .96) for each condition (news article only vs. social media metrics), the social media metrics condition induced significantly greater FPP than the news article only condition for those who scored equal to or +1 SD above the mean in the need to belong, but such difference was not

observed among those scored -1 *SD* below the mean in the need to belong (*Figure 4*). Thus, H6 was supported.

[Insert *Figure 4* Here]

4. Study 2

4.1. Method

4.1.1. Participants

A total of 210 participants (97 men, *M age* = 38.91, *SD* = 10.87) were recruited from Mechanical Turk (MTurk), a crowd-sourcing platform. Participants were self-selected into the MTurk database and received $1 for participating in this online experiment. Although there have been concerns regarding external validity of MTurk samples, it has been argued that a MTurk sample may be more representative than a convenience sample or a college student sample (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Thomas & Clifford, 2017). Furthermore, given the strength of MTurk to attract participants who are interested in and familiar with digital media content (Huff & Tingley, 2015), an MTurk sample may provide reliable data for this study that concerns sharing of online media content. Participants were randomly assigned to one of the two conditions: high social media metrics and low social media metrics. A series of analysis of variance (ANOVA) and chi-square tests found no significant demographic differences between conditions, $p = .84$ (gender), $p = .70$ (age), $p = .25$ (income), and $p = .61$ (education). However, ethnicity of participants differed across conditions, $p = .08$, and thus was included as a covariate in the subsequent analyses.

4.1.2. Design and Procedure

Study 2 followed the same general protocols as Study 1. A pretest questionnaire measured participants' need for closure, media use, prior knowledge of the health risk

(Norovirus), prior experience with Norovirus, and demographic information. Participants then read a news article titled “How to prevent norovirus infection” with high or low social media metrics (*Figure 1*). The icons displayed 2,823 shares in the high social condition and 4 shares in the low social media metrics condition.

4.1.3. Measures

To assess perceived influence of the news story on the self, participants indicated to what extent the article would influence themselves (1 = *Not at all*, 7 = *Very much*, M = 5.00, SD = 1.73). Perceived influence on others was measured using the same question, with “yourself” replaced by “average people in the U.S.” (M = 4.33, SD = 1.50). A FPP indicator was computed by subtracting perceived influence on others from perceived influence on the self (M = 0.66, SD = 1.49).

For perceived injunctive norms, participants were asked to indicate to what extent they agreed with the following three statements (White, Smith, & Terry, 2009): “Most people who are important to me would think I should take preventive measures for the virus,” “People who are important to me agree that taking preventive measured for the virus is a good thing to do,” “People who are important to me would approve of taking preventive measure for the virus” (1 = *Strongly disagree*, 7 = *Strongly agree*, M = 5.65, SD = 1.27, α = .95).

To measure compliant behavioral intentions, participants indicated their likelihood of engaging in the following behaviors in the next 30 days: “Talk with friends and family about preventing the virus,” “seek out more information about preventing the virus,” “following recommendations in the article to prevent the virus,” “adopt necessary habit changes to prevent the virus” (1 = *Not at all*, 7 = *Very much*, M = 4.55, SD = 1.69, α = .91). For intention to share

the article via social media, participants indicated how likely they were to share the article via social media (1 = *Not at all*, 7 = *Very much*, M = 3.49, SD = 2.06).

Need for closure was measured using 15 items adopted from Roets and Van Hiel (2011). Participants indicated to what extent they agreed with proposed statements (e.g., "I don't like situations that are uncertain," "I dislike questions which could be answered in many different ways," 1 = *Strongly disagree*, 7 = *Strongly agree;* M = 4.63, SD = 0.88, α = .87).

4.2. Results

4.2.1. Manipulation check

Participants were asked to indicate to what extent they agreed with the following statement, "The news article had a large amount of shares" (1 = *Strongly disagree*, 7 = *Strongly agree*). An independent sample t-test showed that participants in the high social media metrics condition indicated that the news story had a significantly larger amount of shares (M = 4.68, SD = 1.34) as compared to participants in the low social media metrics condition (M = 4.23, SD = 1.11), $t(208) = 2.52$, $p = .01$.

4.2.2. Hypothesis Tests

To test whether participants would report greater media influence on the self than others (H1) and FPP will increase when social media metrics are high (H2), a 2 (Social media metrics: low vs. high) x 2 (Perceived influence: self vs. others) mixed model repeated measures ANOVA was performed. The potential control variables – prior knowledge of Norovirus, experience with Norovirus, and media use – did not differ across conditions and thus were not included in this analysis and subsequent analyses. There was main effect for self-other ratings, $F(1, 207) = 9.97$, $p = .002$, $\eta^2 = .05$. Participant perceived that they are generally more influenced by the news article (M = 5.00, SD = 1.73) than others (M = 4.33, SD = 1.50), supporting H1. However,

although high social media metrics (M = 0.74, SD = 1.42) increased FPP compared to low social media metrics (M = 0.53, SD = 1.58), the difference was not statistically significant, p = .29, failing to support H2.

[Insert *Figure 5* Here]

To test if the effect of social media metrics on FPP is mediated by perceived injunctive norms (H3) and if enhanced FPP would induce stronger preventive behavioral intentions (H4), a serial mediation test was run with social media metrics as IV (0 = *Low*, 1 = *High*), perceived injunctive norms as mediator 1, FPP as mediator 2, and behavioral intentions as DV (Hayes, 2013, Model 6). Results showed that high social media metrics increased perceived injunctive norms which, in turn, led to greater FPP, indirect effect = 0.08, bootSE = 0.05, 95% bias-corrected 5000 bootstrap CI [.0028, .2120]. Further, high social media metrics induced stronger compliant behavioral intentions through serial mediations by perceived injunctive norms and FPP, indirect effect = 0.03, bootSE = 0.02, 95% bias-corrected 5000 bootstrap CI [.0011, .0769]. Thus, H3 and H4 were supported (*Figure 5*). Controlling for perceived injunctive norms and FPP, the effect of social media metrics on compliant behavioral intentions became insignificant (p =.39), suggesting a full mediation.

To examine if enhanced FPP as a function of the social media metrics effect would induce stronger intentions to share the news article via social media (H5), a serial mediation test was run with social media metrics as IV (0 = *Low*, 1 = *High*), perceived injunctive norms as mediator 1, FPP as mediator 2, and social sharing intentions as DV (Hayes, 2013, Model 6). Data found that high social media metrics increased perceived injunctive norms which, in turn, led to greater sharing intentions, indirect effect = 0.25, bootSE = 0.13, 95% bias-corrected 5000 bootstrap CI [0251, 5121]. Results also showed that high social media metrics increased sharing

intentions via perceived injunctive norms and FPP (i.e., high social media metrics → perceived injunctive norms → FPP → sharing intentions), indirect effect = 0.02, boot*SE* = 0.02, 95% bias-corrected 5000 bootstrap CI [0003, 0517]. Controlling for perceived injunctive norms and FPP, the effect of social media metrics on sharing intentions became insignificant (p =.90), suggesting a full mediation (*Figure 6*). Hence, H5 was supported.

[Insert *Figure 6* Here]

H7 tested if the need for closure moderates the effect of social media metrics on perceived injunctive norms. A simple moderation test was run using a PROCESS macro (Hayes, 2013, Model 1). Perceived injunctive norms were regressed on social media metrics (IV: 0 = *Low*, 1 = *High*), need for closure, and their interaction term. There was main effect of social media metrics, b = 0.38, t = 2.22, p = .04, but need for closure, b = 0.16, t = 1.53, p = .13, and their interaction term, b = 0.27, t = 1.33, p = .19, did not have significant effect on perceived injunctive norms. However, when the estimated values of injunctive norms were plotted at -1 *SD*, mean score, and +1 *SD* of the need for closure (M = 4.63, *SD* = .88) for each condition of social media metrics (low vs. high), high social media metrics induced significantly greater perceived injunctive norms than did low social media metrics only among those who scored equal or +1 *SD* above the mean in the need for closure (*Figure 7*). Thus, H7 was supported.

[Insert *Figure 7* Here]

5. Discussion

The current study investigated how and why social media metrics affect perceived media influence and behavioral intentions. Participants who read a news article with a large number of social media metrics presumed greater media influence on the self than others (i.e., FPP) as compared to those who read the article only or with a small number of social media metrics, and

such effect was more prominent among those with strong need to be affiliated with group members. Greater perception of injunctive norms accounted for the effect of social media metrics on FPP, with those high in the need for closure were more likely to infer injunctive norms from the number of people who shared the news article via social media. Increased FPP as a function of social media metrics led to greater behavioral intentions to prevent the risk discussed in the article as well as to share the article via social media.

5.1. Theoretical and Practical Implications

The most significant theoretical contribution of the current study concerns elucidating psychological mechanism underlying the social media metrics effect on FPP. Specifically, this study highlighted the long-speculated but not directly tested the injunctive norms mechanism; exposure to a large number of social media metrics led participants to believe that other people see the focal issue to be important and the recommended actions in the article ought to be taken, and such perception led to presumption of greater media influence on the self and others. This finding suggests that social media metrics indeed function as a bandwagon cue whereby individuals view social media metrics as an indicator of injunctive norms (i.e., what other people approve) and thus join the normative majority by presuming the self to be more influenced by the media content than others.

At the same time, it is noteworthy that there was no total effect of social media metrics on FPP for the Norovirus article (Study 2), but perceived injunctive norms completely mediated the association between social media metrics and FPP. While statisticians largely agree upon that the total effect should not function as a ‘gatekeeper’ for mediation tests (Hayes, 2009; Shrout & Bolger, 2002), we should consider other mediators that might be operating in opposition, making the total effect insignificant in sum. For instance, people may interpret high social media metrics

as an indication of high levels of exposure to the news article among others, and thereby presume greater media influence on others than on the self (i.e., decreased FPP). Hence, future research should simultaneously examine contradictory mediators to further elucidate the psychological processes underlying the effect of social media metrics on FPP.

It is also possible that the lack of direct effect of social media metrics on FPP in Study 2 might suggest cognitive processing, given that people tend to perceive public health issues more personally relevant than environmental issues (Nisbet, 2009). That is, exposure to a large number of social media metrics did not automatically induce FPP: When individuals read about more personally relevant issue like a public health risk, they may be more willing to analytically assess how diagnostic social media metrics are as an indicator of injunctive norms before jumping on the bandwagon. By contrast, when individuals find the focal issue to be less personally relevant (e.g., climate change; Study 1), they may be more likely to take a less effortful route and rely on simple peripheral cues such as social media metrics to judge the influence of the article. While the current data cannot distinguish whether participants indeed perceived the Norovirus issue (vs. climate change issue) to be more personally relevant, future research would benefit from using multiple topics with different levels of personal relevance to identify a clearer explanation for the different processing of social media metrics.

Another important finding of this study is that individuals' cognitive tendency determines the power of the social media metrics effect on perceived media influence and perceived injunctive norms. That is, participants who had stronger need to belong were more likely to rely on social media metrics when presuming media influence on the self and others (Study 1). Also, participants who were low in the need for closure were not influenced by social media metrics in judging injunctive norms regarding the perspectives or behaviors mentioned in the news article.

In contrast, participants who were high in the need for closure were significantly influenced by social media metrics in their judgment of injunctive norms (Study 2). These findings not only offer continuing support to previous literature that posited the need to belong and the need for closure to be important moderators for tendency to follow the majority opinion (Cialdini et al., 1991; Pickett, Gardner, & Knowles, 2004) or the dominant norms (Chao et al., 2010; Fu et al., 2007; Kruglanski, 2004), but also highlight the need for communication practitioners to pay closer attention to the cognitive traits of their target audience when designing and distributing persuasive messages.

Last but not least, the current study highlighted intriguing behavioral outcomes of FPP as a function of social media metrics. First, participants reported stronger intentions to take actions to prevent the health risk when they perceived greater media influence on themselves than others, mirrors findings from previous research concerning a positive association between FPP and compliant behavioral intentions (Stavrositu & Kim, 2014; Tewksbury et al. 2004; Wei et al., 2008). More importantly, those who perceived greater FPP were more likely to share the news article via social media. For one thing, given that people share media content when they agree with the content or find it interesting and important (Arceneaux et al., 2012; Chung et al., 2015; Fox et al., 2015), this finding suggests that acknowledgment of media influence on the self is a reflection of acceptance or approval of the media content. For another, the finding could be a reminiscent of the two-step flow model of communication (Katz & Lazarsfeld, 1955) in which individual news readers act as opinion leaders and potentially drive greater involvement with the news topics both for oneself and one's social networks (Greenhow & Reifman, 2009; Oeldorf-Hirsch & Sundar, 2015). Although it is beyond the scope of the current study to examine whether social sharing intentions resulting from FPP indeed lead to greater engagement in the

topic, it deserves further investigation if social media metrics function as a tool to encourage civic engagement.

5.2. Limitations and Future Research

It is important to discuss limitations of this study and propose better paths for future research. First, because the current study used a university student sample in Singapore (Study 1) and an MTurk sample in the U.S. (Study 2), some considerations must be given to the possibility that the results are specific to the examined samples. For instance, given that Singapore is a collectivistic society (Hofstede, Hofstede, & Minkov, 2010), this particular sample's reaction to social media metrics in presuming media influence might be dictated by the need to belong more as compared to that of participants in other individualistic countries. Similarly, given that the U.S. is a low-uncertainty avoidance society (Hofstede et al., 2010), Study 2 participants' reaction to social media metrics in judging injunctive norms might be less likely to be dictated by the need for closure as compared to participants in high-uncertainty avoidance countries. Also, with participants who are not consuming online news often or familiar with social media as compare to MTurk participants, the pattern of results can be different. Hence, future studies should expand this line of research beyond these specific demographic groups or cultural contexts.

Second, this study employed aggregated social media metrics (the number of shares via Facebook, Twitter, Google+, and Email or LikedIn altogether). The results might present a different picture if specific sharing numbers for respective social media channels were displayed. Also, there may be critical thresholds of the social media metrics level that have an impact on FPP. There also is a possibility that the specific position of social media metrics on the website

or the design of the website influence the results. Taken together, additional experiments considering these issues could provide further insights into the social media metrics effect.

References

Antonopoulos, N., Veglis, A., Gardikiotis, A., Kotsakis, R., & Kalliris, G. (2015). Web Third-person effect in structural aspects of the information on media websites. *Computers in Human Behaviors, 44,* 48-58. doi: 10.1016/j.chb.2014.11.022

Arceneaux, K., Johnson, M., & Murphy, C. (2012). Polarized political communication, oppositional media hostility, and selective exposure. *The Journal of Politics, 74*(1), 174-186. doi: 10.1017/S002238161100123X

Baumeister R. & Leary M. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117,* 497–529.

Berinsky, A. J., Huber, G. A., & Lenz, G. S. (2012). Evaluating online labor markets for experimental research: Amazon. com's Mechanical Turk. *Political Analysis, 2*, 351-368. doi: 10.1093/pan/mpr057

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data?. *Perspectives on Psychological Science*, *6*(1), 3-5. doi:10.1177/1745691610393980

Chao, M. M., Zhang, Z. X., & Chiu, C. Y. (2010). Adherence to perceived norms across cultural boundaries: The role of need for cognitive closure and ingroup identification. *Group Processes & Intergroup Relations, 13*(1), 69-89. doi: 10.1177/1368430209343115

Chen, G. M., & Ng, Y. M. M. (2016). Third-person perception of online comments: Civil ones persuade you more than me. *Computers in Human Behavior, 55,* 736- 742. doi: 10.1016/j.chb.2015.10.014

Chung, M. (2017). Not just numbers: The role of social media metrics in online news evaluations. *Computers in Human Behavior, 75,* 949-957. doi: 10.1016/j.chb.2017.06.022

Chung, M., Munno, G. J., & Moritz, B. (2015). Triggering participation: Exploring the effects of third- person and hostile media perceptions on online participation. *Computers in Human Behavior, 53*, 452-461. doi: 10.1016/j.chb.2015.06.037

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, *24*(20), 1-243. doi: 10.1016/S0065-2601(08)60330-5

Davison, W. P. (1983). The third-person effect in communication. *Public Opinion Quarterly, 47*(1), 1-15. doi: 10.1086/268763

Fox, J., Cruz, C., & Lee, J. Y. (2015). Perpetuating online sexism offline: Anonymity, interactivity, and the effects of sexist hashtags on social media. *Computers in Human Behavior, 52*, 436-442. doi: 10.1016/j.chb.2015.06.024

Fu, J. H., Morris, M. W., Lee, S., Chao, M., Chiu, C., & Hong, Y. (2007). Epistemic motives and cultural conformity: Need for closure, culture, and context as determinants of conflict judgments. *Journal of Personality and Social Psychology, 92*(2), 191–207. doi: 10.1037/0022-3514.92.2.191

Greenhow, C., & Reifman, J. (2009). Engaging youth in social media: Is Facebook the new media frontier? *Nieman Reports*, *63*(3), 53.

Gunther, A.C. (1995). Overrating the X-rating: The third-person perception and support for censorship of pornography. *Journal of Communication, 45*(1), 27-38. doi: 10.1111/j.1460-2466.1995.tb00712.x

Gunther, A. C., & Storey, J. D. (2003). The influence of presumed influence. *Journal of Communication, 53*(2), 199-215. doi: 10.1111/j.1460-2466.2003.tb02586.x

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* New York, NY: Guilford.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*(4), 408-420. doi: 10.1080/03637750903310360

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind*. New York: McGraw-Hill USA.

Huff, C., & Tingley, D. (2015). "Who are these people?" Evaluating the demographic characteristics and political preferences of MTurk survey respondents. *Research & Politics, 2*(3). doi: 10.1177/2053168015604648

Innes, J. M., & Zeitz, H. (1988). The public's view of the impact of the mass media: A test of the 'third person' effect. *European Journal of Social Psychology, 18*(5), 457-463. doi: 10.1002/ejsp.2420180507

Katz, E., & Lazarsfeld, P.F. (1955). *Personal Influence.* New York: Free Press

Kim, J. (2018). They liked and shared: Effects of social media virality metrics on perceptions of message influence and behavioral intentions. *Computers in Human Behavior, 84*, 153-161. doi: 10.1016/j.chb.2018.01.030

Knobloch-Westerwick, S., Sharma, N., Hansen, D. L., & Alter, S. (2005). Impact of popularity indications on readers' selective exposure to online news. *Journal of Broadcasting & Electronic Media*, *49*(3), 296-313. doi: 10.1207/s15506878jobem4903_3

Kruglanski, A. W. (2004). *The psychology of closed-mindedness*. New York, NY: Psychology Press.

Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the need to belong scale: Mapping the monological network. *Journal of Personality Assessment*, *95*(6), 610-624. doi: 10.1080/00223891.2013.819511

Lee, C. S., & Ma, L. (2012). News sharing in social media: The effect of gratifications and prior experience. *Computers in Human Behavior*, *28*(2), 331-339. doi: 10.1016/j.chb.2011.10.002

Lee, E. J., & Jang, Y. J. (2010). What do others' reactions to news on Internet portal sites tell us? Effects of presentation format and readers' need for cognition on reality perception. *Communication Research*, *37*(6), 825-846. doi: 10.1177/0093650210376189

Lee-Won, R. J., Abo, M. M., Na, K., & White, T. N. (2016). More than numbers: Effects of social media virality metrics on intention to help unknown others in the context of Bone Marrow donation. *Cyberpsychology, Behavior, and Social Networking, 19*(6), 404-411. doi: 10.1089/cyber.2016.0080

McLeod, D. M., Eveland, W. P., & Nathanson, A. I. (1997). Support for censorship of violent and misogynic rap lyrics an analysis of the third-person effect. *Communication Research, 24*(2), 153-174. doi: 10.1177/009365097024002003

Messing, S., & Westwood, S. J. (2014). Selective exposure in the age of social media: Endorsements trump partisan source affiliation when selecting news online. *Communication Research, 41*(8), 1042-1063. doi: 10.1177/0093650212466406

Nisbet, M. C. (2009). Communicating climate change: Why frames matter for public engagement. *Environment: Science and Policy for Sustainable Development*, *51*(2), 12-23. doi: 10.3200/ENVT.51.2.12-23

Oeldorf-Hirsch, A., & Sundar, S. S. (2015). Posting, commenting, and tagging: Effects of sharing news stories on Facebook. *Computers in Human Behavior*, *44*, 240-249. doi: 10.1016/j.chb.2014.11.024

Perloff, R. M. (1999). The third person effect: A critical review and synthesis. *Media Psychology*, *1*(4), 353-378. doi: 10.1207/s1532785xmep0104_4

Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, *30*(9), 1095-1107. https://doi.org/10.1177/0146167203262085

Roets, A., & Van Hiel, A. (2011). Item selection and validation of a brief, 15-item version of the Need for Closure Scale. *Personality and Individual Differences*, *50*(1), 90-94. doi: 10.1016/j.paid.2010.09.004

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*(4), 422-445. doi: 10.1037//1082-989X.7.4.422

Simon, H. A. (1954). Bandwagon and underdog effects and the possibility of election predictions. *Public Opinion Quarterly*, *18*(3), 245-253. Retrieved from http://www.jstor.org/stable/2745982

Stavrositu, C. D., & Kim, J. (2014). Social media metrics: Third-person perceptions of health information. *Computers in Human Behavior*, *35*, 61-67. doi: 10.1016/j.chb.2014.02.025

Sun, Y., Shen, L., & Pan, Z. (2008). On the behavioral component of the third-person effect. *Communication Research*, *35*(2), 257-278. doi: 10.1086/266513

Tewksbury, D., Moy, P., & Weis, D. S. (2004). Preparations for Y2K: Revisiting the behavioral component of the third-person effect. *Journal of Communication, 54*(1), 138-155. doi: 10.1111/j.1460-2466.2004.tb02618.x

Thomas, K. A., & Clifford, S. (2017). Validity and mechanical turk: An assessment of exclusion methods and interactive experiments. *Computers in Human Behavior, 77*, 184-197. doi: 10.1016/j.chb.2017.08.038

Wei, R., Lo, V. H., & Lu, H. Y. (2008). Third-person effects of health news: Exploring the relationship among media exposure, presumed media influence, and behavioral intentions. *American Behavioral Scientist, 52*(2), 261–277. doi: 10.1177/0002764208321355

White, K. M., Smith, J. R., Terry, D. J., Greenslade, J. H., & McKimmie, B. M. (2009). Social influence in the theory of planned behaviour: The role of descriptive, injunctive, and in-group norms. *British Journal of Social Psychology, 48*(1), 135-158. doi: 10.1348/014466608X295207

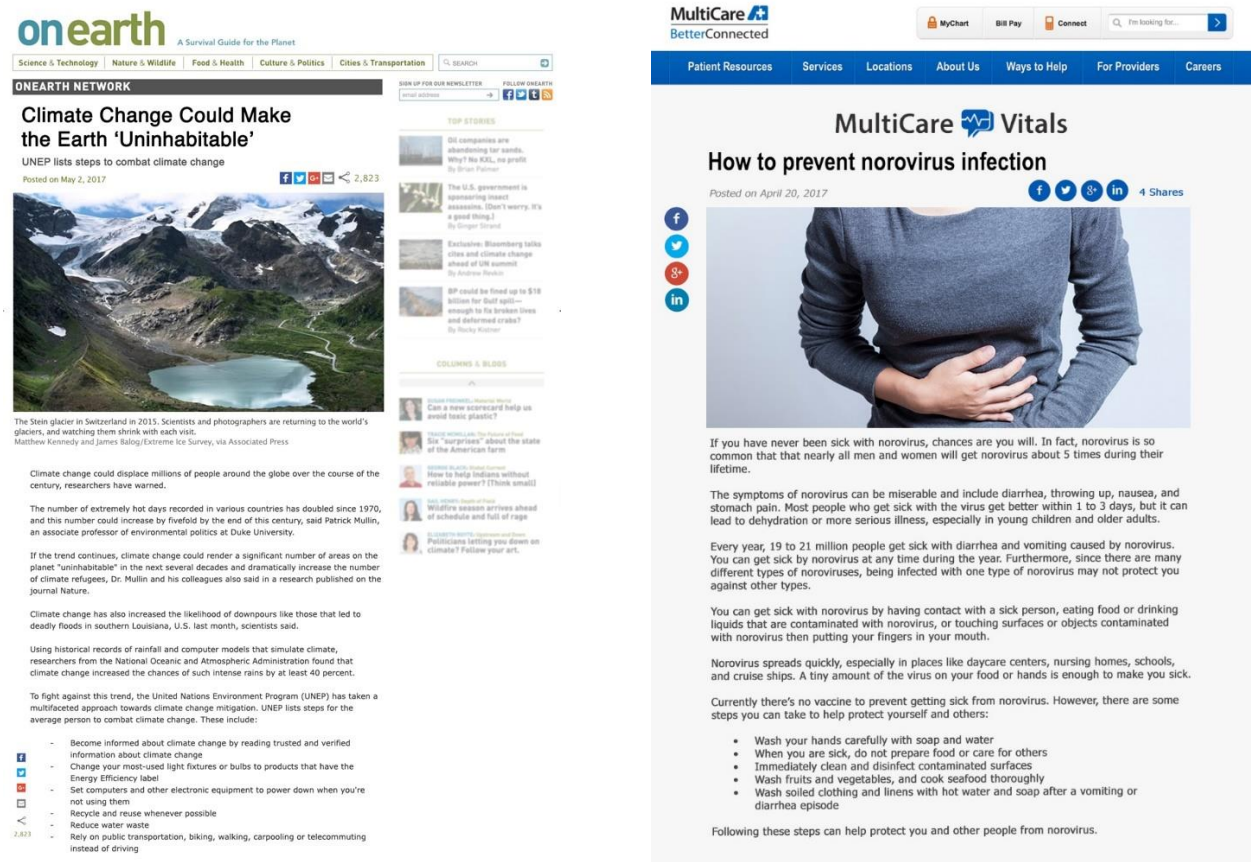

Figure 1. Sample Stimuli for Study 1 (left) and Study 2 (right)

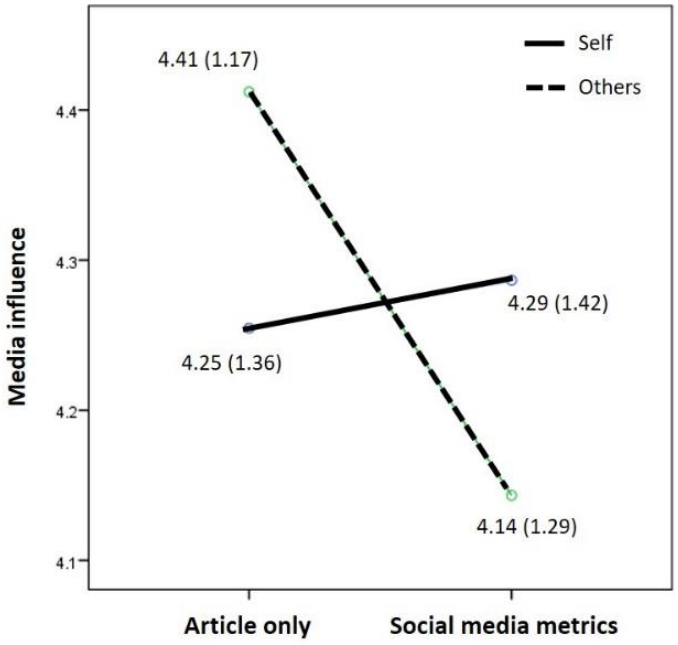

Figure 2. Perceived media influence on self and others.

Note. Perceived media influence (1 = *Not at all*, 7 = *Very much*)

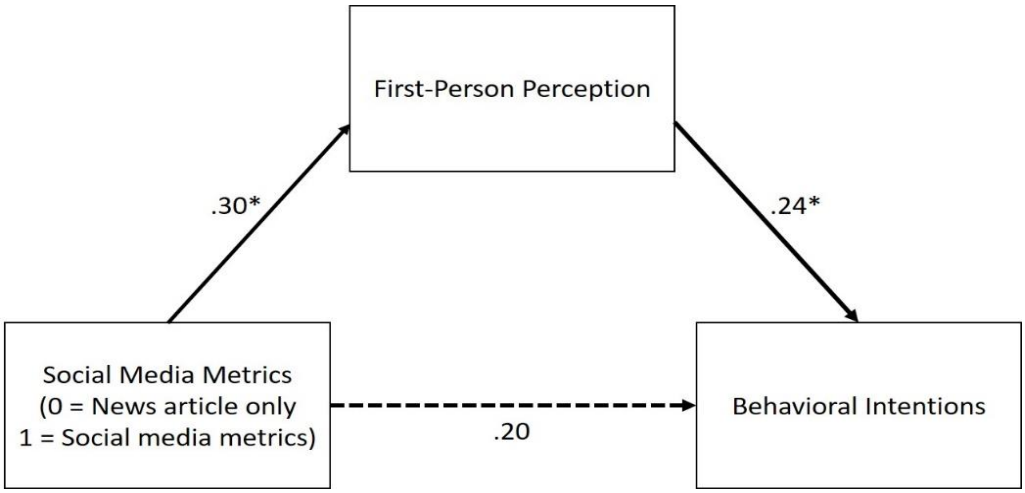

Figure 3. Effects of social media metrics on behavioral intentions via FPP.

Note. Behavioral Intentions (1 = *Not at all*, 9 = *Very much*); *$p < .05$.

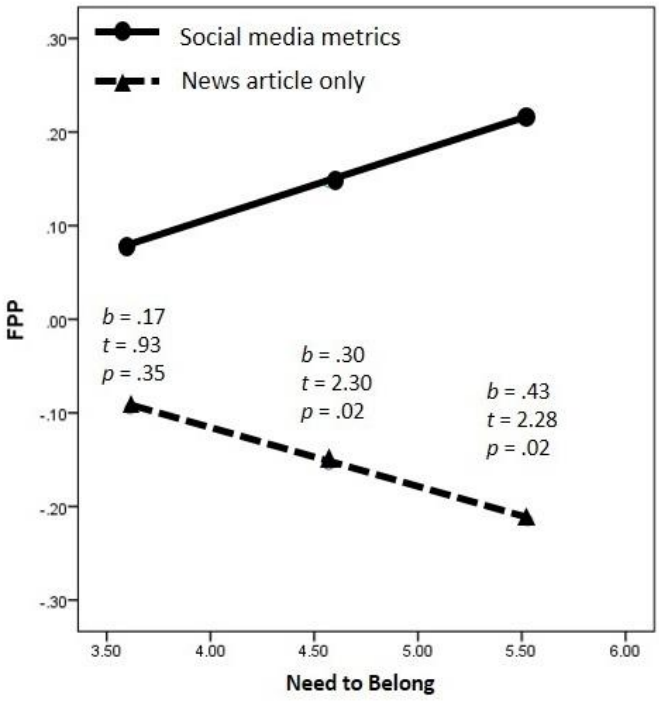

Figure 4. Conditional effects of social media metrics on FPP: Need to belong as a moderator.

Note. *t*-values are for the difference in estimated FPP scores between the absence and presence of social media metrics at -1 *SD*, mean score, and + 1 *SD* of the need to belong.

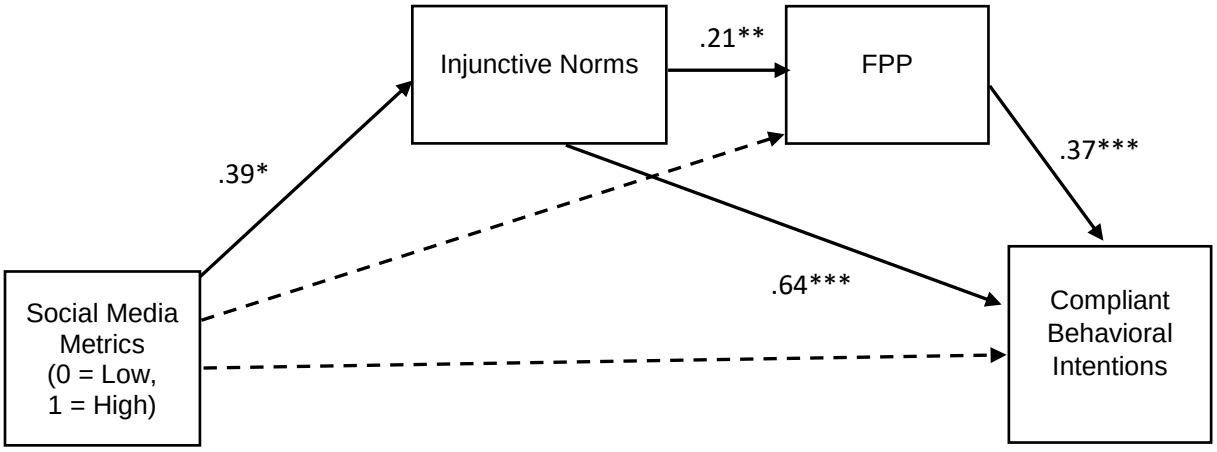

Figure 5. Effects of social media metrics on compliant behavioral intentions via perceived injunctive norms and FPP.

Note. Perceived injunctive norms (1 = *Not at all*, 7 = *Very much*), Behavioral Intentions (1 = *Not at all*, 7 = *Very much*); * $p < .05$. ** $p < .01$. *** $p < .001$.

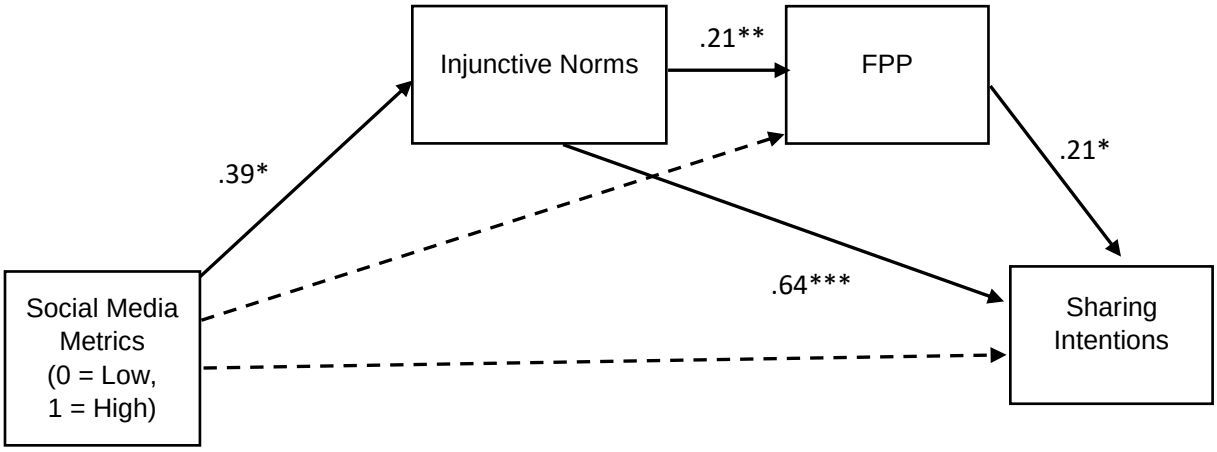

Figure 6. Effects of social media metrics on sharing intentions via perceived injunctive norms and FPP.

Note. Perceived injunctive norms (1 = *Not at all*, 7 = *Very much*), Sharing Intentions (1 = *Not at all*, 7 = *Very much*); * $p < .05$. ** $p < .01$. *** $p < .001$.

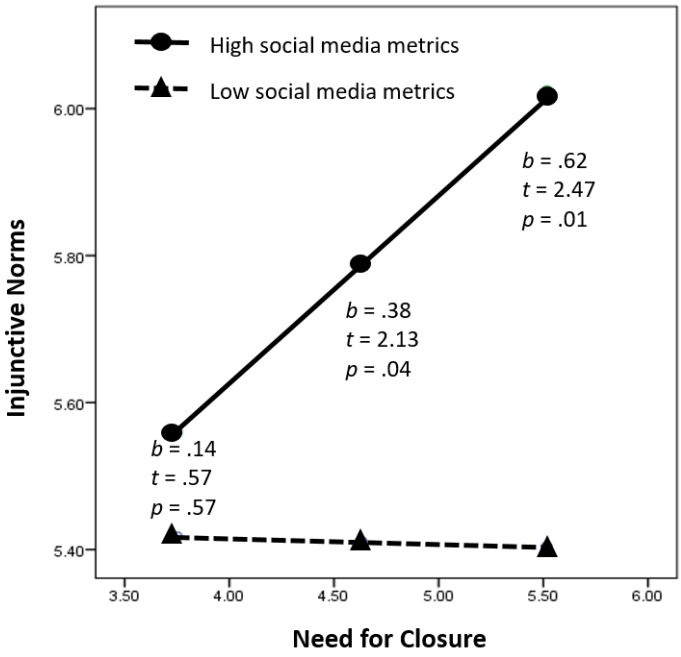

Figure 7. Conditional effects of social media metrics on perceived injunctive norms: Need for closure as a moderator.

Note: *t*-values are for the difference in estimated perceived injunctive norms scores between high and low social media metrics at -1 *SD*, mean score, and + 1 *SD* of need for closure.