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Social presence for strategic health messages: An examination of state governments’ use of Twitter to tackle the Covid-19 pandemic

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ABSTRACT

Scholars investigated the role of social presence theory in numerous communication contexts. However, we have limited knowledge about the impact of social presence strategies on public attention during a pandemic. This study fills this gap by investigating the connections between social presence strategies, Covid-19 strategies, and public attention. Twitter data of state governments from January 21, 2020 to July 21, 2020 were downloaded for this study. Content analysis of 1500 randomly selected posts revealed that social presence strategies were effective in generating public attention on Twitter. Furthermore, expressing appreciation, providing guidance, and informing the publics about governments’ actions generated public attention. Theoretical and practical implications are discussed.

1. Introduction

The rapid spread of coronavirus has a devastating impact on our lives. The virus triggered a health crisis and disrupted economic, social, and psychological well-being. As of March 19, 2022, 967,769 U.S. citizens have died, and 79,522,906 people have been infected by the coronavirus (Center for Disease Control and Prevention, 2022). In 2020, the U.S.’s current unemployment rate was 6.9%, and more than 12.6 million Americans do not have any jobs to support their families due to the pandemic (The US Bureau of Labor Statistics, 2020). Coronavirus has taken away any sense of normalcy from our social lives. Studies found that an increasing number of people reported psychological distress like anxiety, panic attacks, and depression during the pandemic (Luo, Guo, Yu, Jiang, & Wang, 2020). Public health experts argued that rigorous strategic health messaging is required to promote safe health behaviors.

Strategic health communication scholars posited that Twitter plays a critical role in disseminating strategic health messages (Chung & Lee, 2016; Kim, Hou, Han, & Himelboim, 2016; Liu, Lu, & Wang, 2017). Twitter has become a leading platform for public conversation regarding politics, news, public health, and any other important issues. There are 217 million active Twitter users worldwide. In the US, there are 38 million users and among these users, 46% of them visit the site daily (Twitter, 2022). During the Covid-19 pandemic, Twitter has become a leading platform that health experts and governments used to disseminate research findings, providing updates, mitigation measures, and policy suggestions in real-time (Villasenor, 2022).

Recognizing Twitter’s importance, scholars have started to investigate Twitter’s role in strategic public health campaigns. For example, Guidry, Jin, Orr, Messner, and Meganck (2017) investigated the Twitter and Instagram content of health organizations to understand user engagement behavior. Renshaw, Mai, Dubois, Sutton, and Butts (2021) employed a computational approach to analyze social media content to examine content diffusion on Twitter. While these studies enhanced our understanding of Twitter’s role in strategic health messaging, we have limited knowledge about the use of social presence strategies for strategic health messaging practices. More specifically, state governments and their strategic health messaging during the Covid-19 pandemic have remained underexplored. For example, in the context of Covid-19 and government, studies primarily focused on local and national government responses (Dzugbede, Gehl, & Willoughby, 2020; Hansen, Johansson, Sadowski, Blaszczynski, & Meyer, 2021; Zhou & Xin, 2021), trust toward governments (Nielsen & Lindvall, 2021; Zaki, Nicolli, Wayenberg, & Verschueren, 2022), human rights (Zweig, Zapf, Beyrer, Guha-Sapir, & Haar, 2021), and other issues (Ferry, Hardy, & Midgley, 2021; Huysier, Horse, Kuhlmeier, & Huyser, 2021; Liu & Saltman, 2020).

Furthermore, the connection between social presence strategies on Twitter and public attention during the pandemic has remained unexplored. For example, scholars interested in social presence theory primarily focused on the online learning communities (Kreijns, Kirschner, Jochems, & van Buuren, 2011; Richardson & Swan, 2019), human-robot interactions (Ku & Wang, 2022; Lee, Peng, Jin, & Yan, 2006), digital
technology-based collaborations (Bente, Rüegenberg, Krämer, & Eschenburg, 2008), social T.V. experience (Hwang & Lim, 2015), artificial intelligence (Brendel, Greve, Riquel, Böhme, & Greulich, 2022; Shao & Kwon, 2021), mobile medical consultations (Chen, Zhang, & Hou, 2022), and others. Social presence strategies and public attention on Twitter have received limited scholarly scrutiny. A robust understanding of the role of social presence strategies in garnering public attention during a pandemic will be beneficial for both strategic communication scholars and professionals in engaging the community, building relationships, and mitigating the challenges of a public health crisis. For this study, social presence is defined as a communicator’s ability to purposefully engage with the community through affective expressions, interactive communication, and group commitment by projecting his/her personality.

The pandemic is not over yet, and state governments have faced challenges in achieving a significant level of vaccination (CDC, 2021). The rampant spread of misinformation has exacerbated the crisis. Therefore, it is critical from the public health perspective to examine how state governments used Twitter and garnered public attention. This study is very timely and addressed the research gap by investigating state governments’ use of social presence strategies on Twitter for strategic health messaging.

This study has three main objectives. First, the research examined the use of social presence strategies on Twitter by state governments during the early months of the Covid-19 pandemic. For this study, the ten states that reported the highest number of deaths and Covid-19 cases were included. Second, Covid-19 strategic messaging by the state governments was investigated. Third, the researcher investigated the connections between social presence strategies, Covid-19 strategic messaging, and public attention.

As mentioned earlier, the top ten states in terms of reported Covid-19 cases and deaths in the early months of the pandemic were included. State governments’ Twitter data were collected from January 21, 2020 to July 21, 2020. A total of 7632 tweets were collected for this study. The researcher randomly selected 1500 tweets for content analysis. The results revealed that state governments mostly used cohesive and interactive social presence strategies on Twitter. For Covid-19 strategic messaging, the results identified two strategies that were primarily employed by the state governments—information about the government’s handling of the crisis and guidance for stakeholders. This study employed Negative Binomial regression analyses to determine the connections between social presence strategies, Covid-19 strategic messaging, and public attention. The results revealed that social presence strategies and Covid-19 strategic messaging gained public attention on Twitter (Fig. 1).

Strategic public relations played a critical role in “informing, educating, and empowering” the publics during health crises (Guidry et al., 2017, p. 478). Scholars have advocated for creating a solid knowledge base for strategic messaging in mitigating the challenges of health crises. However, the strategic communication scholarship remains hesitant to explore strategic communication’s role to mitigate public health challenges (Guidry et al., 2017; Wise, 2001). This study contributed to strategic communication scholarship by revealing the state governments’ strategic leadership on Twitter to tackle a pandemic. Public relations and strategic communication scholars could develop a solid understanding of social presence theory in strategic health messaging practices by examining this study’s results. Therefore, this study extends the scope of social presence theory by examining the theory’s use in a new communication context: strategic health messaging. This study also tested a new outcome variable—public attention, extending the range of empirical findings of social presence theory (DeAndrea & Holbert, 2017; Slater & Glosson, 2012). From this study, strategic communication professionals, strategic health campaign managers, and policymakers could understand the effective communication strategies to gain public attention on Twitter.

The remainder of the paper is divided into four sections—literature review, research method, results, and discussion. The literature review section delves into social presence strategies, public health crisis and strategic social media messages, and public attention. The research method section explores the research method, data collection, and coding process. The researcher revealed the findings of this study in the results section. The last section provides a discussion of the research findings and the significance of the study.

2. Literature review

2.1. Social presence theory

Social presence is a popular concept in computer-mediated communication (CMC) (Biocca, Harms, & Burgoon, 2003; Lowry, Roberts, Romano, Cheney, & Hightower, 2006; Sia, Tan, & Wei, 2002), education (Krejins et al., 2011; Richardson & Swan, 2019), business (Cyr, Hassanein, Head, & Ivanov, 2007; Hassanein & Head, 2007), artificial intelligence (Brendel et al., 2022; Shao & Kwon, 2021), and medicine (Chen et al., 2022). However, there is a challenge in studying social presence because scholars have defined and measured social presence in myriad ways. In this section, I will first explore the diverse approaches to defining social presence. Second, I will focus on different ways scholars have measured social presence. Third, I will address the working definition of social presence and three strategies of social presence.

In the 1970s, social presence was conceptualized as a quality of a communication medium to facilitate user interactions to develop interpersonal relationships. Short, Williams, and Christie (1976) defined social presence as the “degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (p. 65). They conceptualized social presence as a quality of telecommunication medium to facilitate interpersonal communication. Subsequent scholarships were inspired by this line of conceptualization (Mason, 1994; McLeod, Baron, Marti, & Yoon, 1997; Tung & Deng, 2006). Oztok and Brett (2011) posted that the second era of social presence research emerged in the 1990s, which shifted from the technological deterministic view of social presence and highlighted it as a perceptual component and the individual differences in communication. Scholars defined social presence as “The degree to which a person is perceived as ‘real’ in mediated communication” (Gunawardena & Zittle, 1997, p. 8).

Scholars have also attempted to capture behavioral indicators to define social presence (Garrison, Anderson, & Archer, 2000; Kehrwald, 2008, 2010; Rourke, Anderson, Garrison, & Archer, 1999). Biocca et al. (2003) mentioned that increasingly empirical studies reported visible activities like emotional expression, interactive messaging, and others as demonstrations of social presence (Chen, Fang, & Locke, 2015). Most recently, scholars have started to conceptualize social presence as
people’s ability to engage in purposeful communication to project their personalities to build relationships (Garrison et al., 2000; Kehrwald, 2008; Rourke et al., 1999). For example, Cleveland-Innes et al. (2019) defined social presence as “the ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal and affective relationships progressively by way of projecting their individual personalities” (p. 69). The focus of such conceptualization is people’s ability to engage in purposeful communication to build relationships with the community. Such an understanding of social presence dominates the current scholarly investigations (Lowenthal & Snelson, 2017; Oktok & Brett, 2011). The myriad definitions of social presence consequently influence the emergence of competing measures of social presence.

Social presence scholarship has developed several measures of social presence. Short et al. (1976) developed a set of semantic differential scales to measure social presence. Lee and Nass (2001) developed a four-item scale to measure the social presence of voices. Gunawardena and Zittle (1997) developed the Social Presence Scale (SPRES), which influenced the subsequent social presence scholarship. This scale used 14 items to capture social presence. Tu (2002) critiqued the SPRES and developed the Social Presence and Privacy Questionnaire to measure social presence. This questionnaire has 27 items and used the five-point Likert scale. Biocca, Harms, and Gregg (2001) also developed the Networked Minds Social Presence Questionnaire to assess social presence. Several other scholars have developed different scales to measure social presence (Kang, Choi, & Park, 2007; Kiliç Çakmak, Çebi, & Kan, 2014; Moreno & Mayer, 2002, 2004).

Later, scholars argued that content analysis has become the popular methodology to examine social presence (Kreijns, Acker, Vermeulen, & Buuren, 2014; Lowenthal, 2010). This approach to the scholarly investigation of social presence was influenced by the work of Rourke et al. (1999). They identified three behavioral indicators: affective, interactive, and cohesive responses to measure social presence. Rourke et al.’s (1999) measurement of social presence has remained influential in social presence scholarship. A Google Scholar search revealed 2521 citations. Scholars have used affective, interactive, and cohesive responses to measure social presence in diverse contexts (Baisley-Nodine, Ritzhaupt, & Antonenko, 2018; Evans, Knight, Walker, & Sutherland-Smith, 2020; Fornara & Lomicka, 2019). Furthermore, public relations scholars have employed such a measurement of social presence to examine public relations practices (Mazid, 2020; Men, Tsai, Chen, & Ji, 2018). For example, Men et al. (2018) examined the connection between CEOs’ Facebook posts projecting social presence and likes, shares, comments, and reactions.

The literature review revealed a challenging landscape of social presence scholarship that has produced myriad definitions and competing measures of social presence. Building on the current scholarship on social presence, this study defined social presence as a communicator’s ability to purposefully engage with the community through affective expressions, interactive communication, and group commitment by projecting his/her personality. Aligning with the current public relations and social presence scholarship (Garrison et al., 2000; Mazid, 2020; Men et al., 2018; Rourke et al., 1999), this study employed three strategies of social presence—affective, interactive, and cohesive—to investigate how communicators use social presence to project themselves on digital platforms.

The affective strategy reflects socioemotional communication by users that display their emotions, feelings, and openness. Such behaviors indicate that people strategically use digital platforms to convey a sense of warmth, intimacy, and connectedness (Mazid, 2020; Men et al., 2018; Rourke et al., 1999). The interactive strategy captures communicators’ interactive behaviors like referring to someone’s post, quoting others, asking questions, and complimenting others to develop meaningful social interactions (Mazid, 2020; Men et al., 2018; Rourke et al., 1999). Such behaviors are critical to developing and sustaining social relationships. The interactive strategy signals the collaborative intentions of communicators. Communicators use a cohesive strategy to foster a sense of group commitment. People often use inclusive pronouns, phatic communication, and refer to the publics by name to signal a sense of online community (Mazid, 2020; Men et al., 2018; Rourke et al., 1999).

RQ1: What types of social presence strategies do state governments use on Twitter during the early days of the Covid-19 pandemic?

2.2. Public health crisis and strategic social media messages

Public health crises often create a sense of uncertainty, fear, and frustration. In such situations, the strategic health messages could mitigate our sense of vulnerability and promote safe health behaviors. Scholars interested in health crisis communication and social media primarily investigated the handling of misinformation, crisis response strategies, and the message and tone of public posts. Eckert et al. (2018) systematically reviewed seventy-nine studies that investigated the use of social media for health crisis communication. They found that scholars widely recommended using social media to mitigate the threats of misinformation and promote safe health behaviors. DiStaso, Vafíadis, and Amaral (2015) investigated health crisis response strategies on Facebook using a survey-experiment design. Their study revealed that the information strategy generated favorable post-crisis reputation and trust compared to the response strategy of sympathy. In another study, scholars (Meadows, Meadows, Tang, & Liu, 2019) examined the use of Twitter for the California measles outbreak. The study reported that people tend to express concern or alarm in the early stage of the health crisis through their tweets. Therefore, governments need to strategically use social media to address public concerns and provide guidelines.

In the context of Covid-19, the strategic public health messaging by governments is critical to tackling the pandemic. The pandemic situation is still unfolding; therefore, the scholarly literature on governments’ use of strategic messaging on social media is still very limited. However, a few studies employed computational analysis to reveal the communication strategies of public agencies. In one study, scholars (Renshaw et al., 2021) analyzed 72,466 tweets posted by public agencies in the U. S. They revealed that the use of URLs, user mentions, and replies impact retweeting behavior. Sutton, Renshaw, and Butts (2020) examined the Twitter strategies of public health agencies and found that the use of hashtags targeting high-risk populations was absent. Overall, the literature review suggests a gap in strategic communication scholarship regarding governments’ use of Twitter for strategic health messaging to mitigate the challenges of a pandemic. This study fills this specific research gap by formulating the following research question:

RQ2: What types of Covid-19 strategic messaging do state governments use on Twitter during the early months of the pandemic?

2.3. Public attention

The most valuable commodity in post-industrial societies is public attention (Bueno, 2016; Wu, 2016). Governments, nonprofit organizations, for-profit organizations, activists, and others constantly compete to gain public attention. In the context of a global pandemic, governments and health agencies need to capture public attention to promote safe health behaviors, mitigate risks, and respond to misinformation. Such organizations understand that it is difficult to save lives and manage economic stability without adequate public attention to public health messaging. However, scholars argued that increasing audience fragmentation and the explosion of online content added to the challenge of reaching the publics and garnering attention (Bueno, 2016; Webster, 2014).
During the heyday of broadcast media, the big three (ABC, CBS, and NBC) could deliver 70% of American prime-time audiences to advertisers (Webster, 2014). However, there is a steep decline in T.V. prime-time audiences. Furthermore, American households increasingly enjoy access to a wide range of channels and media outlets, which exacerbates audience fragmentation. The rise of digital and social platforms created an explosion of online content. For example, we send 500 million tweets, share 4.75 billion items on Facebook, and upload 720,000 hours of video content on YouTube every day (Ho, 2021; Mohsin, 2021; Smith, 2020). The abundance of information has created a scarcity of attention (Webster, 2014). In addition to such an explosion of information, changing audience behavior like multitasking, second screening, and the depletion of attention span has exacerbated the situation.

However, scholars argued that social media could be a gateway to public attention (Mazid, 2020; Webster, 2014). The communicative affordances of social media provide opportunities that could be leveraged to gain public attention. For example, Twitter provides liking and sharing capabilities to social content. Tweet liking behavior reflects affective evaluation of users, and retweet reveals the possible reach of content (Alhabash & McAlister, 2015). If a Twitter user wants to share or like content, it could create a ripple effect on content diffusion on the platform. Such behavior could potentially lead to generating public attention. Scholars recommend creating useful and interesting content to trigger public liking and sharing behavior to garner attention. Therefore, strategic communication professionals must understand the dynamics of strategic health messaging that could deliver public attention.

Scholars argued that social media messaging is critical to mitigating health risks and garnering public attention (Barman-Adhikari et al., 2016; Jain, Zaher, & Mazid, 2020). Studies on public health widely reported the efficacy of social media messages to mitigate health risks and strengthen user engagement (Fergie, 2016; Liu et al., 2017; Rabarison et al., 2017). For example, Guidry et al. (2017) analyzed Twitter and Instagram content related to the Ebola outbreak. They found that solution-based messaging and the use of visual imagery impact user engagement on social media. In another study, scholars (Jain et al., 2020) analyzed tweets related to the opioid crisis to examine content diffusion behavior. The study revealed that tweets about causes, pain management, help/assistance, and overdose positively impacted retweeting behavior. Strekalova and Krieger (2017) examined the Facebook page of the National Cancer Institute and found that risk-related messages generated public attention on the platform. While previous studies enriched our knowledge about the efficacy of social media for public health, we have a research gap regarding social presence strategies and Covid-19 content strategies that could capture public attention. Therefore, this study fills this research gap by formulating the following hypotheses:

H1. Twitter messages that employed social presence strategies would generate more public attention than the messages that did not use social presence.

H2. Strategic Covid-19 messages would generate more public attention than the non-Covid-19 messages.

3. Research method

For this study, content analysis was employed to examine tweets posted by ten U.S. state governments. Content analysis is considered a rigorous, systematic, and robust social scientific method to analyze online content (Krippendorff, 2018; Skalski, Neundorf, & Cagius, 2017). The top ten states in terms of Covid-19 cases and deaths in the early months of the pandemic were included in this study based on the Johns Hopkins Covid-19 data tracker. These top ten states were: New York, New Jersey, Massachusetts, California, Pennsylvania, Illinois, Michigan, Florida, Louisiana, and Texas. The rationale for selecting the top ten states is that these states were most impacted by the pandemic in terms of deaths and reported cases. Therefore, it was critical to examine how the top ten states used Twitter to project social presence to garner public attention. Furthermore, it is important to examine how the most impacted states used Twitter to respond to a public health crisis using Covid-19 message strategies. The states that were included in the study were at the forefront of mitigating the crisis and needed to be effective in messaging to inform, educate, and build relationships with the publics.

Twitter data of the top ten state governments were downloaded using NodeXL, a social media analytics tool. Data were collected from January 21, 2020 to July 21, 2020. The first Covid-19 case in the U.S was identified on January 21, 2020; thus, the researcher considered this date as a starting point for the data collection. A total of 7632 tweets were collected for this study. The researcher randomly selected 1500 tweets for content analysis. Previous studies on social media content employed similar sampling procedures (Huang, Lin, & Saxton, 2016; Kim & Yang, 2017).

3.1. Coding procedure and intercoder reliability

For this study, codes for social presence strategies were adapted from current literature on social presence (Mazid, 2020; Men et al., 2018; Bourke et al., 1999). Scholars have tested and employed three social presence strategies: affective, interactive, and cohesive. Building on the current social presence scholarship, this study employed three codes to capture the use of social presence strategies and one code to identify tweets that had not used any social presence strategies. A total of four codes were employed. These codes were: affective, interactive, cohesive, and no-use of social presence. The affective strategy is operationalized as a tweet that focuses on affective content like emotional expression, provides an opinion, and/or even express a sense of vulnerability. This study operationalized interactive strategy as a tweet that engages in interactive behavior like referencing others’ content, sharing others’ content, sharing a quote, asking questions, and/or expressing agreement. Cohesive strategy refers to a post that refers to the publics by name, uses an inclusive pronoun, and/or engages in social communication. This study identified ‘no-use of social presence’ as a tweet that does not use social presence strategies. These variables are nominal level variables.

For Covid-19 strategic messaging, codes were adapted from Chen et al. (2020). Five codes were employed to examine Covid-19 strategic messaging. These codes were: latest news about the COVID-19 crisis, express appreciation, guidance for stakeholders, information about the government’s handling of the crisis, and no-strategic health messaging. This study operationalized the latest news about the COVID-19 crisis as a tweet that provides the latest information about COVID-19. Express appreciation was operationalized as a tweet that appreciates the frontline emergency service providers. This study operationalized guidance for stakeholders as a tweet that provides guidance to people on safe health behaviors. Information about the government’s handling of the crisis is defined as a tweet that provides information about state governments’ actions to mitigate Covid-19 challenges. For this study, ‘no-strategic health messaging’ was operationalized as a tweet that did not use any Covid-19 strategic health messaging. These variables are nominal level variables.

For this study, a standard coding sheet was used for content analysis. At first, the primary investigator and a strategic communication scholar participated in a two-hour-long training session. Then, the two coders coded 150 randomly selected tweets. After the first round of coding, the coders identified discrepancies and revised the coding rule. The two coders coded another 150 randomly selected tweets for the second round of coding and reached an acceptable level of intercoder agreement. These 300 tweets were excluded from the dataset. Cohen’s kappa results for coding items for social presence and strategic health messages ranged from 0.80 to 0.91, which reflect good intercoder agreement. The two coders coded a total of 1500 tweets for analysis. See Appendix 1 for intercoder reliability scores.

Building on the work of Guo and Saxton (2018, 2020), this study operationalized public attention in terms of the number of favorites and retweets. These variables are ratio-level count data.
4. Results

Research question 1 asked the types of social presence strategies employed by the state governments. Descriptive analysis was performed to answer the question. The analysis revealed that state governments predominantly used interactive strategy (N = 322, 21.5%), followed by cohesive (N = 305, 20.3%) and affective (N = 288, 19.2%) strategies. Research question 2 asked the types of Covid-19 strategic messaging employed by the state governments. Descriptive analysis revealed that state governments predominantly used information about the government’s handling of the crisis strategy (N = 364, 24.3%), followed by guidance for stakeholders (N = 269, 17.9%), appreciation (N = 155, 10.3%), and the latest news about the COVID-19 crisis (N = 103, 6.9%) strategies.

This study employed Negative Binomial regression to test hypotheses 1 and 2. Negative Binomial regression is appropriate for this study because the dependent variables are ratio level count data, and the dispersion of the count data (number of favorites and retweets) is greater than a Poisson distribution (Saxton & Waters, 2014). It means the data are over-dispersed (variance exceeds the means). Scholars recommend employing Negative Binomial regression that uses Gamma distribution to tackle overdispersion (Wang, Xie, & Fisher, 2011).

Four regression models were used to test the hypotheses. A series of dummy variables were created that reflected social presence strategies and Covid-19 strategic messaging. For the first model, the independent variables were: affective, interactive, and cohesive. The dependent variable was the number of favorites. The model was statistically significant (Favourites: χ² = 5252.91, p < .001). The results of the regression analysis revealed that affective strategy, interactive strategy, and cohesive strategy significantly predicted more favorites compared to messages that did not employ social presence strategies. For the second model, the independent variables were affective, interactive, and cohesive. The dependent variable was the number of retweets. The model was statistically significant (Retweets: χ² = 2472.33, p < .001). The results of the regression analysis revealed that affective strategy, interactive strategy, and cohesive strategy significantly predicted more retweets compared to messages that did not employ social presence strategies. For the third model, the independent variables were the latest news about Covid-19, appreciation, guidance to stakeholders, and the government’s handling of the crisis. The dependent variable was the number of favorites. The model was statistically significant (Favourites: χ² = 2445.69, p < .001). The results of the regression analysis revealed that the latest news about Covid-19, appreciation, guidance to stakeholders, and the government’s handling of the crisis significantly predicted more favorites compared to no-strategic health messaging. For the fourth model, the independent variables were: the latest news about Covid-19, appreciation, guidance to stakeholders, and the government’s handling of the crisis. The dependent variable was the number of retweets. The model was statistically significant (Retweets: χ² = 2405.75, p < .001). The results of the regression analysis revealed that the latest news about Covid-19, appreciation, guidance to stakeholders, and the government’s handling of the crisis significantly predicted more retweets compared to no-strategic health messaging. Please check Table 1 for β, S.E., and Incident Rate Ratio (IRR) of Negative Binomial regression results.

Studies often report the Incident Rate Ratio (IRR) to interpret the results of Negative Binomial models. Scholars identified IRR as a reflection of “the factor change in the dependent variable for a one-unit change in the independent variable” (Saxton & Waters, 2014: p. 292). Therefore, the IRR provides the much-needed interpretation to understand the practical implications of the study. In the context of the current study, affective strategy has an IRR of 401.11 for Favorite and 37.64 for Retweets; this means an affective strategy message can be expected to receive 401.11 times the number of Favorites, and 37.64 times the number of Retweets than a message that did not use social presence strategy; holding all other variables constant.

5. Discussion

The results of this study have significant theoretical and practical contributions. This research extends our understanding of social presence theory mainly in two ways. First, to the best of our knowledge, this study is one of the first research projects that employed social presence theory in the context of strategic health messages. Second, this study tested a new dependent variable: public attention to test the efficacy of social presence strategies. Furthermore, this research generated robust strategic insights about strategic health messaging that could garner public attention. Strategic communication professionals, health communications practitioners, public health agencies, and policymakers could leverage the strategic insights of this study to design messages to mitigate the challenges of a pandemic.

This study extends the scope of social presence theory by incorporating it into the context of a public health crisis. Previous studies employed social presence theory to explore consumer-brand relationships, online learning, user collaborations, and customer loyalty. However, we have limited knowledge about the use of social presence theory to investigate strategic health messaging to mitigate the challenges of a pandemic. The findings of this study revealed that state governments’ tweets primarily employed social presence strategies (61 %) rather than non-social strategies (39 %). The rationale could be that strategic communication professionals working in the state governments understand the value of social presence in building relationships and cultivating trust to mitigate health crises. Furthermore, this study tested a new dependent variable, public attention, to examine the efficacy of social presence strategies. The results revealed that affective, interactive, and cohesive strategies effectively generate public attention. Such findings could trigger new scholarly interest in the role of social presence theory for strategic health messaging.

5.1. Implications for practice

Public health crisis often generates a sense of vulnerability, frustration, and fear. In such challenging times, strategic communication professionals need to capture public attention to promote safe health behaviors and mitigate risks. This study revealed that social presence strategies could assist strategic communication professionals in capturing public attention. For example, affective strategy messages can be expected to receive 401.11 times the number of favorites and 37.64 times the number of retweets than a message that does not use a social presence strategy. Similarly, interactive and cohesive messages are effective in generating public attention on Twitter. Therefore, strategic communication professionals could leverage the insights of this study to garner public attention to mitigate the challenges of a pandemic.

One of the critical findings of this study is that not all social presence
strategies are equally effective in capturing public attention. The results revealed that affective strategy and interactive strategy are more effective than the cohesive strategy to generate favorites and retweets. However, the study found that state governments used the affective strategies the least. Perhaps state governments wanted to prioritize developing a sense of interactive online community through Twitter. Such strategies are essential, but capturing public attention needs to be prioritized during a pandemic to tackle the health crisis. Therefore, both affective and interactive strategies could be the front and center of strategic health messaging. Previous studies also documented the efficacy of affective content for audience engagement (Berger & Milkman, 2012; Mazid, 2020). Therefore, state governments may plan to create a content mix that leverages interactive and affective strategies while strategically using the cohesive strategy to garner public attention.

Covid-19 message strategies that triggered the most favorites are expressing appreciation and providing guidance for stakeholders. Furthermore, expressing appreciation and providing information about the government’s handling of the crisis generated more retweets than the other strategies. Such finding reflects that during a pandemic, the humane aspects of social media communication play a critical role in garnering attention. Therefore, strategic communication professionals need to integrate strategies that demonstrate the social and emotional aspects of governments-publics relationships. Furthermore, communication professionals need to prioritize messages that guide stakeholders and inform the public about the governments’ actions to tackle the pandemic. Overall, the pandemic-specific messages could leverage the humane aspects of social communication that reflect a sense of appreciation, provide guidance about safe health behaviors, and inform the public about governments’ role in mitigating a health crisis.

5.2. Limitations

This study has a few limitations. First, this study only examined the Twitter data of ten state governments in the early months of the Covid-19 pandemic. An examination of Tweets posted by all fifty states could provide a comprehensive picture of strategic health messaging. Second, this study was not able to compare any strategic changes in messages during different waves of the pandemic. Strategic communication professionals may have identified the effective strategic messages in the early stage of the pandemic and made relevant strategic changes to adapt to the publics’ needs. Future research may categorize messages based on different waves of the pandemic and identify the efficacy of strategic messages to tackle a pandemic. Third, the researcher made all attempts to identify content strategies that could deliver public attention. However, this study did not test different demographic and geographic variables relevant to content efficacy. Future research could integrate such variables to understand audience behavior during a pandemic.

6. Conclusion

This study tested the efficacy of social presence strategies on Twitter for strategic health messages. The findings revealed that social presence strategies are effective in garnering public attention. Furthermore, this research investigated Covid-19 messaging strategies and found that expressing appreciation, providing guidance about safe health behaviors, and informing the public about governments’ role in mitigating a health crisis played a critical role in generating public attention. Overall, the current research attempted to open a new avenue of strategic health communication research that could leverage the insights of social presence theory to investigate digital audience behaviors.

Conflict of interest

There is no conflict of interest.

Appendix 1. Intercoder reliability score and examples of codes (Mazid, 2020; Men et al., 2018; Rourke et al., 1999)

| Code | Examples | Intercoder score |
|------|----------|-----------------|
| **Social presence strategies** | | |
| Affective | On behalf of @FirstLadyOfLA and my entire administration, it is with heavy hearts that we mourn the loss of our dear April, who succumbed to complications from COVID-19. She brightened everyone’s day with her smile and was an inspiration to everyone who met her. @lagov @ialege | .83 |
| | We deeply mourn the 758 New Yorkers we lost yesterday to COVID-19. New York is not numb. We know this is not just a number — it is real lives lost forever. I am so proud that nearly 1800 former & out-of-state health care workers have answered our call to join in the fight against COVID-19. Each one of them is an inspiration & will save countless lives. If you want to join them, visit http://IDFPR.com | |
| Interactive | “All Californians should be able to get the mental health and substance use disorder assistance they need when they need it. We must also prevent these conditions when possible, and intervene early to reduce their severity, particularly among younger Californians.” - @GavinNewsom | .87 |
| Cohesive | good morning, new jersey | |
| No Social presence | Tornado Warning continues for Grand Cane LA, Longstreet LA, Gloster LA until 10:00 A.M. CDT | .81 |
| Covid-19 strategic messaging | Our state total of COVID-19 cases is now 16. Information around this outbreak is changing rapidly. The latest information is available at http://Michigan.gov/Coronavirus and http://CDC.gov/Coronavirus | .87 |
| Latest news about the COVID-19 crisis | And to every health care provider that has joined our ranks to fight COVID-19 on the frontlines — you are our heroes, thank you from the bottom of my heart. | .91 |
| Appreciation | We can all stay healthy and protect our community from #COVID19 by taking steps like: | .85 |
| Guidance for stakeholders | Washing hands often | |
| | Covering coughs and sneezes | |
| | Disinfecting surfaces | |
| | Staying home | |
| | Visit http://covid19.ca.gov | |
Public Relations Review 48 (2022) 102223
I. Mazid

Information about the governments’ handling of the crisis
@IDPH has launched a statewide COVID-19/coronavirus hotline and website to answer any questions from the public or to report a suspected case: 1-800-889-3931

http://IDPH.illinois.gov

No Covid-19 strategy
#DYK? Michigan is the nation’s leading producer of potatoes for potato chip processing. Better Made Chips are a favorite Michigan brand!

@MichAgCouncil http://ow.ly/Mpdi50y10Dx

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