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Emotions in the time of coronavirus: Antecedents of digital and social media use among Millennials

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1. Introduction

The coronavirus COVID-19 pandemic has posed an unprecedented threat to global health. The World Health Organization has referred to it as “a real threat to everyone on the planet” (Higgins-Dunn, Mangan, Lovelace, & Feuer, 2020). At the time of the current study, from April 27-May 7, 2020, there were global totals of 3.72 million confirmed coronavirus cases and 263,489 related deaths, as well as U.S. subtotals of 1.23 million confirmed cases and 73,431 deaths (Our World in Data, 2020). As nations and states responded, workplace and school closures and stay-at-home orders were widespread. The coronavirus, as well as these lifestyle changes, influenced what health information was available online and how Americans used it, creating an “infodemic” (United Nations, 2020). Of U.S. adults in April 2020, 87% reported that the Internet had been important or essential to them during the coronavirus outbreak (Vogels, Perrin, & Anderson, 2020).

The current study explores the affective, personal relevance, and socio-demographic antecedents of three types of digital and social media use: 1) digital health information seeking behavior (digital HISB); 2) high-informational social media use (SMU); and 3) low-informational SMU. Research on the antecedents of these types of digital and social media use has primarily centered on psychosocial factors. In terms of HISB, research has explored antecedents such as health status, media trust, efficacy, and perceived severity and susceptibility (Jacobs, Amuta, & Jeon, 2017; Johnson & Meischke, 1993; Shim, Kelly, & Hornik, 2006). In terms of SMU, research has explored antecedents including personality traits such as extraversion and neuroticism (Blackwell, Leaman, Tramposch, Osborne, & Liss, 2017) and gratifications such as passing time and maintaining social connections (Quan-Haase & Young, 2010). Notably, emotion has received limited attention in the dominant bodies of research specific to the antecedents of HISB and SMU.

The current study centers on U.S. Millennials’ digital and social media use in the context of the coronavirus COVID-19 pandemic. This population of interest is important for three reasons. First, Millennials comprise the largest generational segment of the U.S. population and of the U.S. workforce (Fry, 2018, 2020). Second, Millennials are the most active and experienced generation when it comes to new technologies (Pew Research Center, 2010). As life-long Internet and digital media users, Millennials have been termed “digital natives” and are highly savvy and skilled with computers, the Internet, and digital technologies.

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Millennials’ Internet use increased from 83% in 2005 to 90% in 2010, with the 2010 level higher than for any other generation (Pew Research Center, 2010). Third, U.S. Millennials are an especially important audience segment in terms of coronavirus preventive efforts (Wagner et al., 2020). According to Dr. Deborah Birx, the White House coronavirus response coordinator, Millennials are “the core group that will stop this virus” (Lahut, 2020). Millennials, though not a high-risk group for negative coronavirus outcomes, are central to mitigating the spread of the novel coronavirus because they are socially active and often have no or mild symptoms (Stone, 2020).

This study has implications for research on digital and social media, breaking new ground in considering the independent and interactive effects of discrete emotions. It also has implications for practice, including in terms of how individuals use digital and social media as a conduit for mood management and how an emotion-centered segmentation approach can be developed for digital and social media use. The importance of this research is buttressed by the growing role that social media play as active conduits through which people seek out information about health threats and respond to them (Allen, Roberts, Andersen, & Khoury, 2020).

2. Digital and social media use

In terms of digital and social media use, we center on digital HISB and SMU. HISB involves the intentional search for health information from media and other sources (Johnson & Meischke, 1993) and facilitates coping with a health threat and the consequential emotions of the threat (Lambert & Loiselle, 2007). HISB influences health outcomes, including knowledge, lifestyle choices, and preventive behaviors (Beaudoin & Hong, 2011; Shim et al., 2006). Of Internet-using U.S. Millennials, 91.88% and 90.85% performed a digital search for health or medical information for self in 2017 and 2019, respectively (National Cancer Institute, 2017, 2019). Also pertaining to Millennials, one study found that 64% of young adults had previously searched for health or medical information, with the Internet being the most common source for the most recent search (Manganello & Clayman, 2011), and another study explored the antecedents of Internet HISB among 20–24 year olds, documenting higher levels among females and respondents with a college education (Galeshi, Sharman, & Cai, 2018).

Social media are “interactive [platforms that allow] social actors to create and share in multi-way, immediate, and contingent communications” (Vanmeter, Grisaffe, & Chonko, 2015) (p. 71). SMU can have positive outcomes, such as perceived life satisfaction (Valenzuela, Park, & Kee, 2009), and negative outcomes, such as depression (Lin et al., 2016). SMU is especially common among U.S. Millennials, increasing from 7% in 2005 to 75% in 2010, with this latter level higher than for any other generation (Pew Research Center, 2010). Unlike the current study’s operationalization of digital HISB specific to information seeking, our operationalization of SMU is general, including social media usage for any purpose, including communication, information sharing, and social support (Chou, Hunt, Beckjord, Moser, & Hesse, 2009). That said, research has emphasized that social media are major conduits for health information (Allen et al., 2020; De la Torre-Díez, ; Mano, 2014), with 32% of U.S. adults getting health information from social media in 2010 (Thackerny, Crookston, & West, 2013). Millennials rely on blogs and social media for health information more than traditional media (e.g., TV), but less than interpersonal sources (e.g., friends and family) (Bartlett, Bowen-Ziecheck, Kumah, & Beheshti, 2019).

3. Antecedents of digital and social media use

Fig. 1 depicts our conceptual model of the antecedents of digital and social media use. There are four sets of direct antecedents: 1) socio-demographics; 2) personal relevance; 3) discrete positive emotions; and 4) discrete negative emotions. The figure specifies paths that relate to the independent-effect hypotheses, but not the interactive-effect research questions. This model is a refinement of other models that have been used to frame the antecedents of HISB. The Comprehensive Model of Information Seeking (CMIS) theorizes the following antecedents of HISB: background factors, personal relevance factors, information carrier factors, and utility (Johnson, 1997). The Cognitive-Social Health Information Processing Model (C-SHIP) theorizes upon cognitive and affective antecedents of information seeking, as well as their interactions, which predict preventive behavior (Miller, Shoda, & Hurley, 1996). The current study’s conceptual model includes factors similar to CMIS’s background factors (such as demographics) and personal relevance factors, as well as factors similar to C-SHIP’s affective factors. Research on the antecedents of SMU also includes psychosocial factors, such as demographics and personality attributes (Blackwell et al., 2017; Quan-Haase & Young, 2010), and affective factors (Bolton et al., 2013; Leung, 2013).

Our theorizing here centers on the independent and interactive effects of emotions. In the face of environmental events, including health threats, individuals interpret the events as a means to regulate their emotions, autonomic changes, and behavior (Plutchik, 1989). Skinner (1938) wrote: “Emotion is not primarily a kind of response at all but rather a state of strength comparable in many respects with a drive” (p. 407). The current study centers on five primary emotions—one discrete emotion that is positive (i.e., joy) and four discrete emotions that are negative (i.e., fear, anger, sadness, and disgust) (Plutchik, 1980). Given that different emotions with the same valence may function differently in decision-making processes (Leone, Perugini, & Bagossi, 2005; Raghunathan & Pham, 1999), we implement discrete emotions in their individual form, instead of grouping them together to create composite measures of positive emotions and negative emotions. This approach permits examining how each discrete emotion functions independently and interactively. Involving respondents’ consideration of each emotion across the past month, the current study operationalizes emotions as states in the present or recent past, which can be triggered by threatening events (Plutchik, 1980).

Scholars have postulated upon the role of emotions in determining what decisions people make. We contend that decision making is an important process in whether people choose to partake in digital HISB and SMU. The literature on decision making has theorized and empirically documented that anticipated positive and negative emotions can both have positive effects on behavior, representing symmetrical affective influence in that both valences of emotions have the same direction of
effect on an outcome (Bagozzi, Baumgartner, & Pieters, 1998; Leone et al., 2005). While this research involves anticipated emotions, we believe its framing of symmetrical affective influence, as compared to asymmetrical affective influence, can be adapted to our context of experienced emotions and is generally consistent with the current study’s placement of emotions as antecedents of digital and social media use. Also supportive of the ordering of emotions prior to media use is research on the Mood Adjustment Approach, which posits that people regulate their moods via media exposure (Knobloch, 2003). In particular, people make decisions about media use based upon their current mood state and goals for mood adjustment. It’s not as simple as people always preferring positive media content as a means to transition from a negative mood state to a positive mood state. Instead, people may prefer media content that helps them lessen or amplify an emotion as a means to conducting another task successfully (Knobloch-Westerwick & Alter, 2006).

In making connections between emotions and behavior, research has often turned to approach and avoidance motivations as a means to theorizing upon dual-effect processes of emotions. The first step in this process entails how an environmental event or threat can influence emotions (Plutchik, 1980). In the second step, emotions are conceived to stimulate one of two processes, with positive emotions driving approach motivations and negative emotions driving avoidance motivations (Davidson, Ekman, Saron, Senulis, & Friesen, 1990; Plutchik, 1989). In a third step, it can be theorized that individuals with approach motivations may be inclined to partake in HISB as a means to addressing the threat, whereas individuals with avoidance motivations may be disinclined to partake in HISB as a means to evade the threat. While this application is specific to HISB, we believe it can be extended to SMU.

Despite the intuitive appeal and parsimony of these dual processes of affective influence, there are several shortcomings, which underpin our different view of affective influence on digital and social media use. First, affective influence has been conceived to be more refined than the binary processes of approach and avoidance. Each of this study’s five emotions has a unique behavioral expression, adaptive function, and biological regulatory process. For instance, the biological regulatory process of joy is fusion, which entails creation. The biological regulatory processes of the other emotions are as follows: avoidance for fear; approach for anger; separation for sadness; and ejection for disgust (Plutchik, 1989). The next two counter rationales entail how positive and negative emotions can both spur individuals to address a threat. Second, people experiencing higher levels of emotions are likely to exaggerate stimulus events and behave actively (Carver, 2003). Thus, what matters is people’s overall levels of emotions, not whether their emotions are positive or negative. Third, instead of having distinct motivational outcomes, positive and negative emotions can both function in approach and avoidance processes (Carver, 2003). In this case, positive and negative emotions can encourage individuals to pay attention to and think about a stimulus event, with these processes consistent with learning and behavioral adoption and performance (Baumeister, Vohs, DeWall, & Zhang, 2007; Fredrickson, 2001).

With this basis, we postulate that positive emotions, as well as negative emotions, will share the same direction of associations with digital and social media use. In our review of pertinent literature, we center on HISB- and SMU-specific research and research that has employed measures of discrete emotions.

### 3.1. Expectations for the independent effects of emotions on digital HISB

In terms of empirical findings specific to HISB, some research has employed scales for negative emotions and fear of cancer. This research in the context of cancer has documented a negative indirect effect of fear on HISB (Johnson & Meischke, 1993) and a positive association between a negative emotion scale and HISB-related outcomes, as measured unobtrusively through an online health system (Shaw et al., 2008). With our measures of discrete emotions and digital HISB specific to the coronavirus, we contend that the current study will function on par with research in general settings, where Cotten and Gupta (2004) documented a positive association between general happiness and HISB. As suggested specific to anticipatory emotions and decision making (Leone et al., 2005), we expect symmetrical affective influence, in particular that positive emotions, as well as negative emotions, will share the same positive association with social and digital media use.

**H1.** Discrete positive emotions are positively associated with digital HISB.

**H2.** Discrete negative emotions are positively associated with digital HISB.

### 3.2. Expectations for the independent effects of emotions on SMU

That emotions influence SMU is generally supported by how affect is integral to how people make decisions (Leone et al., 2005) and how they socially interact with one another (Markus & Zajonc, 1985). Emotions have been theorized to predict SMU, including usage types and intensity (Bolton et al., 2013), and other research underscores how individuals use social media to address preexisting emotional states. For example, Shao (2009) theorized that individuals undergoing stress may turn to YouTube to mitigate their stress given this platform’s entertainment content related to music, television, and movies. Additionally, Leung (2013) found that Millennials’ venting of negative feelings was associated with their use of online forums. In summary, this literature provides general support for a positive association between emotion and SMU. As with HISB, we expect that discrete positive and negative emotions are positively associated with SMU, which is indicative of symmetrical affective influence (Leone et al., 2005).

**H3.** Discrete positive emotions are positively associated with SMU.

**H4.** Discrete negative emotions are positively associated with SMU.

### 3.3. Expectations for the interactive effects of emotions on digital HISB and SMU

Finally, we consider how discrete emotions, whether positive and negative, may interact with one another to predict digital and social media use. Research has indicated that specific types of emotions function in relation to and dependent upon one another, with stimulus events eliciting diverse emotions given that individuals differentially appraise events and the threats that they pose (Smith & Lazarus, 1990). Dillard and Kean (1996) contended that, given that events are complex and can be interpreted differentially, they can influence more than one emotional response, resulting in the “co-occurrence” of positive and negative emotions such as happiness and sadness. As Fredrickson (2001) pointed out, there can be an interplay of divergent emotions, including how positive emotions can mitigate negative emotions. Supportive of the co-occurrence of emotions, another study found that positive and negative emotions related to past experiences can interact to predict whether a future performance is successful or not (Ruiz & Hanin, 2014).

Specific to HISB and SMU, there are two potential types of interactive effects. First, there may be synergistic effects in which an increase in one discrete emotion amplifies the relationship between another discrete emotion and a measure of social and digital media use. Second, there may be counter interactive effects in which an increase in one discrete emotion diminishes the relationship between another discrete emotion and a measure of social and digital media use. We articulate two general research questions.

**RQ1.** Do the interactions of discrete emotions, whether positive or negative, significantly predict digital HISB?

**RQ2.** Do the interactions of discrete emotions, whether positive or negative, significantly predict SMU?
4. Methods

4.1. Data and sample

This study employed data from an online survey from April 27-May 7, 2020, which occurred after the World Health Organization (2020) declared the coronavirus COVID-19 as a pandemic on March 11, 2020. The representative survey was of U.S. Millennials (aged 25–39), matching quotas for the population according to gender, education, and ethnicity. Qualtrics hosted the survey and recruited respondents, resulting in a final sample of 1037 U.S. Millennials. Institutional Review Board approval was obtained at the research university of the authors.

4.2. Measurement

Digital HISB. With a basis in HINTS (National Cancer Institute, 2020), there was one measure of digital HISB. The survey item entailed respondent usage for self of novel coronavirus information in the past month via “computer, smartphone, or other electronic means.” Responses were on a scale from “never” (0) to “every day” (5) and recoded as days per month (0–28).

SMU. Assessment entailed 10 social media platforms: Facebook, Twitter, Instagram, YouTube, TikTok, Tumblr, Snapchat, Pinterest, LinkedIn, and Reddit. This is a mixture of social networking, blogging, and media sharing platforms. The SMU items were about general use and were not specific to the topic of the coronavirus. There were two questions for each individual social media platform, with hour-specific responses for normal weekdays and for a normal weekend in the last month (i.e., from “no time” [0] to “30 min” [1] and then, on an hourly basis, to “10 hours or more” [11]). Responses were recoded to represent hours per week. Factor analysis (principal components with oblique rotation) yielded two dimensions: 1) low-informational SMU (eigenvalue = 4.83, variance explained = 48.27%; \( \alpha = 0.94 \)); and 2) high-informational SMU (eigenvalue = 2.40, variance explained = 23.97%; \( \alpha = 0.80 \)). High-informational SMU consisted of Facebook, YouTube, Twitter, and Instagram, whereas low-informational SMU consisted of the other six social media platforms. Creating these two information-specific dimensions of SMU is supported by the literature, including how Facebook, YouTube, Twitter, and Instagram are the most common social media sites as conduits to news information (Shearer & Matsa, 2018).

Discrete positive and negative emotions. There were items for the following five primary emotions: fear, anger, sadness, disgust, and joy (Plutchik, 1989). Respondents reported the degree to which they had felt each of these emotions specific to their experience with the coronavirus COVID-19, with responses on a 5-point scale from “very slightly or not at all” (1) to “extremely” (5). Of the five discrete emotions, four were negative (i.e., fear, anger, sadness, disgust) and one was positive (i.e., joy).

Personal relevance. Personal relevance was measured with two items: 1) having personally tested positive for the coronavirus; and 2) knowing another person who had tested positive for the coronavirus (Kaiser Family Foundation, 2020).

Socio-demographics. There were seven socio-demographic variables: gender (M = 1), household income, education, ethnicity (W = 1), age, health insurance, and employment. Household income was assessed from “$9999 or less” (1) to “$200,000 or more” (9), and education was assessed from “less than 8 years” (1) to “postgraduate” (7). Dichotomous variables were used for health insurance and fulltime employment.

4.3. Analysis procedures

Stata 16 was used for statistical analysis, including tests of outliers and normality and the transformation of variables. Ordinary least squares (OLS) regression entailed three dependent variables: digital HISB; high-informational SMU; and low-informational SMU. Independent variables were entered hierarchically in three blocks: 1) socio-demographic and personal relevance variables; 2) five discrete emotions; and 3) the interactions of the five discrete emotions. The emotion variables were standardized prior to constructing the interaction terms. In the interaction figures, significant interaction terms were plotted at one standard deviation (SD) below the mean, at the mean, and at one SD above the mean (Aiken & West, 1991). Variance inflation factors (VIFs) were calculated for the regression models to assess for potential multicollinearity (Allison, 2012).

5. Results

The mean education was 4.37 (SD = 1.51), which indicates more than high school graduate. The mean household income was 4.74 (SD = 2.23), which is nearing the grouping of $35,000-$49,999. The sample was 46.58% male and 63.36% White. Also, 52% were employed full-time, and 76.95% had health insurance. About 6% of the sample reported having tested positive for the coronavirus, and almost one-third reported knowing another person who had tested positive for the coronavirus. The descriptive statistics for digital HISB and the SMU and emotion variables are presented in Table 1. Respondents, on average, reported making a coronavirus information search on more than 12 days in the past month, and by collapsing the continuous variable, we can see that more than 91% of the sample reported making such an information search in the past month. In terms of SMU, per-week hourly rates were more than 20 hours and more than 15 hours for high- and low-

Table 1

| Variable                                      | Mean     | SD       | Min | Max |
|-----------------------------------------------|----------|----------|-----|-----|
| Digital HISB (continuous)                     | 12.31    | 11.42    | 0   | 28  |
| Digital HISB (dichotomous)                   | 91.32%   |          | 0   | 1   |
| High-Informational Social Media Use           | 20.51    | 17.44    | 0   | 80  |
| Low-Informational Social Media Use            | 15.15    | 21.56    | 0   | 87  |
| Joy                                           | 2.03     | 1.30     | 1   | 5   |
| Anger                                         | 3.50     | 1.20     | 1   | 5   |
| Disgust                                       | 3.55     | 1.18     | 1   | 5   |
| Fear                                          | 3.64     | 1.24     | 1   | 5   |
| Sadness                                       | 3.76     | 1.18     | 1   | 5   |

1 After excluding incompletes (n = 80), the final sample was of 1037 respondents who completed the survey.

2 To assess the validity of the two dimensions of SMU, we calculated Pearson correlations of the individual SMU items, as well as the two resulting scales (i.e., low-informational SMU and high-informational SMU), with the measure of digital HISB. Digital HISB was significantly correlated with only the individual high-informational SMU items and the overall high-informational SMU scale, which suggests that these items are more information-oriented than the individual low-informational items and their resulting low-informational SMU scale.

3 Research has documented the validity of single-item survey measures for discrete emotions (Plutchik, 1989).

4 Outliers were identified only for low-informational SMU, in which 22 outliers were rescored with the next highest value. For variables that were significantly skewed right (i.e., household income, joy, high-informational SMU, and low-informational SMU), square root transformations were conducted. For variables that were significantly skewed left (i.e., fear, anger, sadness, disgust, and digital HISB), square transformations were conducted. Transformed variables were used in the correlation and regression analyses, whereas pre-transformation variables are depicted in Table 1.
digital and social media use. There are nine models, three for each emotion (i.e., Models 3, 6, and 9). The range of VIFs was from 1.06 to 2.35, with a mean of 1.65. In terms of socio-demographics (see Models 1, 4, and 7), education was positively associated with digital HISB and low-informational SMU, and Whites and older respondents had lower levels of both SMU dimensions. Finally, respondents with health insurance had higher levels of digital HISB. The two measures of personal relevance (i.e., having tested positive for coronavirus and knowing another person who had tested positive) were positively associated with both SMU dimensions.

5.1. Results for hypotheses

Entailing the respective associations of positive emotions and negative emotions with digital HISB, H1 and H2 relate to Model 2. Of the discrete emotions, two were significant predictors of digital HISB—fear ($\beta = 0.11$) and sadness ($\beta = 0.14$). These results, with their positive coefficients, provide support for H2. H1 is unsupported given the non-significant effect of joy.

Entailing the respective associations of positive emotions and negative emotions with SMU, H3 and H4 relate to Models 5 and 8. In Model 5, three of the discrete emotions were significant predictors of high-informational SMU—fear ($\beta = 0.09$), joy ($\beta = 0.14$), and disgust ($\beta = 0.12$). In Model 8, two of the discrete emotions were significant predictors of low-informational SMU—joy ($\beta = 0.23$) and disgust ($\beta = 0.11$). The results specific to the positive emotion (i.e., joy) provide support for H3 in terms of both SMU dimensions. H4 is supported in terms of the relationships between two emotions (i.e., fear and disgust) and high-informational SMU and the relationship between disgust and low-informational SMU.

5.2. Results for research questions

Entailing the interactions of emotions in predicting digital HISB and SMU, RQ1 and RQ2 relate to Models 3, 6, and 9. There were four significant interactions—fear $\times$ anger ($\beta = 0.09$) and sadness $\times$ disgust ($\beta = 0.11$) in predicting digital HISB and sadness $\times$ disgust ($\beta = 0.11$) and anger $\times$ disgust ($\beta = -0.09$) in predicting high-informational SMU. These interactions are depicted in Figs. 2-5. For the first three significant interactions, increases in the levels of two emotions brought about a multiplicative increase in the outcome variable. For instance (see Fig. 2), for low levels of fear, there was an inverse relationship between anger and digital HISB, but for high levels of fear, the relationship between anger and digital HISB changed and became positive. A generally similar pattern of effects was present for the second and third significant interactions (see Figs. 3 and 4).

The interaction depicted in Fig. 5 is different. For low levels of disgust, there was a positive relationship between anger and high-informational SMU, but for high levels of disgust, the relationship between anger and high-informational SMU changed and became inverse.

6. Discussion

During the coronavirus pandemic, U.S. Millennials, who are technologically active and savvy, had high levels of digital and social media use. In the past month, 91.32% reported having conducted a digital coronavirus information search, and SMU levels were quite high, perhaps as a result of respondents sheltering in place and facing significant challenges related to the pandemic. Digital HISB and SMU functioned differently in terms of their socio-demographic antecedents. Digital HISB was predicted by respondents having health insurance and higher education. In contrast, both types of SMU were predicted by respondents being younger and non-White, and low-informational SMU was predicted by respondents having higher education. Importantly, our data suggest that younger, non-White Millennials flock to social media, irrespective of whether the platforms are high or low in information content. While it’s not surprising that social media are an especially common outlet for younger Millennials, the finding per non-Whites may suggest a shift in usage. Pre-pandemic research indicated that non-Whites use high-informational SMU platforms (e.g., Instagram, Twitter) at somewhat higher rates than Whites, but that non-Whites use low-informational SMU platforms (e.g., LinkedIn, Pinterest) at lower rates than Whites (Krogstad, 2015). Our data suggest that, during the pandemic, non-Whites are using both types of SMU platforms at higher rates than Whites, thus, extending their reliance on social media. Finally, indicative of the importance of personal relevance, the two measures of coronavirus testing significantly predicted increased levels of the SMU measures, which suggests that experience with the novel coronavirus enhances people’s perceptions of the importance of pertinent information (Johnson & Meischke, 1993).

Consistent with prior research on HISB (Cotten & Gupta, 2004; Shaw et al., 2008) and SMU (Bolton et al., 2013; Leung, 2013; Shao, 2009), each of the seven significant independent effects of emotions on the measures of digital and social media use had a positive coefficient, signifying symmetrical affective influence (Leone et al., 2005). With this symmetrical influence, what matters for affective influence on digital and social media use is the intensity of emotions (i.e., strong versus weak) and not the valence of emotions (i.e., positive versus negative). Thus, there is evidence that people with higher levels of emotions were more likely to react to a threat (Carver, 2003), which, in the current study, may take form in digital HISB and SMU. A closer look, though, points out an important difference across the three outcome measures. In particular, affective influence was symmetrical for both high- and low-informational SMU, with positive associations documented for positive and negative discrete emotions. This suggests that Millennials—whether happy or fearful or disgusted—turn to social media across a pandemic. The situation was different for digital HISB, where the only emotions with significant effects were fear and sadness—both negative emotions. Thus, individuals experiencing positive emotions such as joy did not have elevated levels of HISB, perhaps because coronavirus information would likely be rife with uncertainty, negativity, and misinformation, which could undercut a person’s positive mood state. Thus, across the pandemic, it could be that Millennials are using social and digital media for mood management (Knoebloch, 2003).

The current study’s testing of interactive affective influence makes a novel contribution to theory. There were four significant interactions in predicting digital and social media use, which speaks to how emotions co-occur (Dillard & Keen, 1996) and function dependently and interdependently (Dildrickson, 2001; Ruiz & Hanin, 2014). The prominent pattern of interactive effects (i.e., in three of four cases) was that an increase in a negative emotion amplified the effect of another negative emotion on digital and social media use. Along with the generally symmetrical nature of independent emotion effects, these interactive results suggest that affective influence is a function of the intensity of emotions—rather than the valence of emotions—which, again, underscores the notion that people experiencing higher levels of emotions are most likely to react to a threat (Carver, 2003). In contrast, in the case of
of the fourth significant interaction, an increase in a negative emotion diminished the effect of another negative emotion on digital and social media use. This differential influence may have resulted from the pairing of two negative emotions with strong biological regulatory processes, approach for anger and ejection for disgust (Plutchik, 1989). With its negative coefficient, this interaction is generally consistent with how negative emotions can drive avoidance motivations (Davidson et al., 1990; Plutchik, 1989). There was no evidence that this pairing of negative emotions functions in this manner for the other two outcome measures. One final issue entails that there were no significant interactions for low-informational SMU. It could be that interactions for this variable are a function of media content, with low-informational social media being less common conduits to news information (Shearer & Matsa, 2018) and being more conducive to entertainment gratification and effect processes (Leung, 2013; Quan-Haase & Young, 2010).

7. Limitations and conclusions

Four limitations should be acknowledged. First, as is normally the case with self-report survey questions, there was the potential for response bias. Second, given the use of cross-sectional data, this study cannot derive inferences of causation. Third, while the current study used general SMU measures, there may be value for future research to

### Table 2

Ordinary least squares regression of predictors of HISB and SMU outcomes (N = 1037).

|                     | Digital HISB | High-Informational SMU | Low-Informational SMU |
|---------------------|--------------|------------------------|-----------------------|
|                     | Model 1      | Model 2                | Model 3               | Model 4      | Model 5                | Model 6               | Model 7      | Model 8                | Model 9               |
| Block 1             |              |                        |                       |               |                       |                       |               |                       |                       |
| Gender (M = 1)      | .04          | .05                    | .04                   | .03          | .02                    | .02                   | .02          | .01                    | .02                   |
| Household Income    | -.03         | -.03                   | -.03                  | -.05         | -.04                   | -.03                  | -.06         | -.04                   | -.03                  |
| Education           | .11***       | .10**                  | .10**                 | .03          | .03                    | .03                   | .08**        | .09**                  | .09**                 |
| Ethnicity (W = 1)   | -.01         | -.03                   | -.03                  | -.12***      | -.10***                | -.10**                | -.13***      | -.09**                 | -.08**                |
| Age                 | .05          | .04                    | .04                   | -.11***      | -.10***                | -.10**                | -.15***      | -.14***                | -.14***               |
| Employment (Fulltime = 1) | .01   | .02                    | .01                   | .05          | .04                    | .02                   | .09**        | .07*                   | .07*                  |
| Health Insurance    | .07*         | .05                    | .05                   | .05          | .04                    | .03                   | .06         | .05                    | .04                   |
| Tested Positive for Coronavirus | -.06      | -.05                   | -.05                  | .10***       | .08**                  | .07*                  | .22***       | .18***                 | .17***                |
| Know Person w/Positive Coronavirus Test | .03          | .01                    | .01                   | .09**        | .08**                  | .08**                 | .08*         | .07*                   | .08**                 |
| R²                  | .03          | .07                    | .05                   | .07          | .05                    | .05                   | .07         | .05                    | .05                   |
| F                   | 3.06**       | 8.12***                | 19.90***              |               |                       |                       |               |                       |                       |
| Block 2             |              |                        |                       |               |                       |                       |               |                       |                       |
| Fear                |              |                        |                       |               |                       |                       |               |                       |                       |
| Joy                 |              |                        |                       |               |                       |                       |               |                       |                       |
| Anger               |              |                        |                       |               |                       |                       |               |                       |                       |
| Sadness             |              |                        |                       |               |                       |                       |               |                       |                       |
| Disgust             |              |                        |                       |               |                       |                       |               |                       |                       |
| R²                  | .08          | .10                    | .21                   |               |                       |                       |               |                       |                       |
| ΔR²                 | .06          | .04                    | .06                   |               |                       |                       |               |                       |                       |
| ΔF                  | 12.95***     | 2.43**                 | 15.64***              |               |                       |                       |               |                       |                       |
| Block 3             |              |                        |                       |               |                       |                       |               |                       |                       |
| Fear * Joy          |              |                        |                       |               |                       |                       |               |                       |                       |
| Fear * Sadness      |              |                        |                       |               |                       |                       |               |                       |                       |
| Fear * Anger        |              |                        |                       |               |                       |                       |               |                       |                       |
| Fear * Disgust      |              |                        |                       |               |                       |                       |               |                       |                       |
| Joy * Sadness       |              |                        |                       |               |                       |                       |               |                       |                       |
| Joy * Anger         |              |                        |                       |               |                       |                       |               |                       |                       |
| Joy * Disgust       |              |                        |                       |               |                       |                       |               |                       |                       |
| Sadness * Anger     |              |                        |                       |               |                       |                       |               |                       |                       |
| Sadness * Disgust   |              |                        |                       |               |                       |                       |               |                       |                       |
| Anger * Disgust     |              |                        |                       |               |                       |                       |               |                       |                       |
| R²                  | .10          | .13                    | .22                   |               |                       |                       |               |                       |                       |
| ΔR²                 | .02          | .02                    | .01                   |               |                       |                       |               |                       |                       |
| ΔF                  | 1.80         | 2.43**                 | 1.81                  |               |                       |                       |               |                       |                       |

*p < .05, **p < .01, ***p < .001.

Standardized coefficients are reported.
Credit statement

Christopher E. Beaudoin: Conceptualization; Methodology; Formal analysis; Investigation; Writing – original draft; Writing – review & editing; Project administration; Traci Hong: Conceptualization; Methodology; Formal analysis; Writing – original draft; Writing – review & editing.

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