

Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

FISEVIER

Contents lists available at ScienceDirect

Computers in Human Behavior Reports

journal homepage: www.sciencedirect.com/journal/computers-in-human-behavior-reports





Communication outside of the home through social media during COVID-19

Natalie Pennington

, Communication Studies, University of Nevada, Las Vegas, USA

ARTICLE INFO

Keywords: COVID-19 Loneliness Life satisfaction PANAS Social media use

ABSTRACT

This study explored, through quantitative and qualitative survey analysis (N = 307), the role of communication through social media during the COVID-19 pandemic. Data were collected in April 2020 to understand how individuals engaged with their network through social media and the subsequent relationship with subjective well-being, conceptualized as loneliness, life satisfaction, and positive and negative affect. Results identified that passive social media use contributed to greater loneliness and a decrease in life satisfaction. Some active use of social media contributed to an increase in positive affect. However, other active uses increased feelings of loneliness. Results also spoke to differences across platforms, with time on Twitter leading to increased feelings of loneliness. Qualitative results pointed to an increase in social media use during the pandemic while also highlighting the opportunity to digitally reconnect with old friends and family.

1. Introduction

The spread of coronavirus (COVID-19) has affected almost every facet of people's day-to-day lives worldwide. Of importance to this study was the implementation of social distancing and stay-at-home orders by the government to help curb the spread of the disease. Given the magnitude of the pandemic, it is unsurprising research has already emerged identifying increased mental health concerns (e.g., Holingue et al., 2020; Zhong et al., 2020). From the start, communication technology was used to combat feelings of social isolation. Uses ranged from hosting virtual gatherings with friends to "attending" religious services through video-based platforms, among other things (Pew Research Center 2020a, 2020b). This same research also found that Americans felt the virus had changed their lives; those surveyed identified several things they might normally do (e.g., eat out, go to a party, visit with a friend or family member) that they were now concerned about participating in given the risk of virus spread. While a vaccine has been administered to millions signaling a potential end to the pandemic, an April 2021 survey found 62% of Americans believed it would be a year or longer before things returned to "normal," and another 8% suggested things would never return to normal (Myers, 2021).

With social distancing requirements likely extending for some time, there remains a need to explore how individuals get their social needs met, if at all, through communication technology. While some people may be comfortable and proficient with communication technology,

that is not true of all Americans. Further, communication technology may not be enough to sustain one's subjective well-being. Data from the Pew Research Center (2020b) noted that while 18-29-year-olds were more likely to use communication technology during the start of the pandemic, they were also twice as likely to experience a high degree of emotional distress than those who were 65+ years old. These numbers were found at two different time points, suggesting continued emotional stress for young people as the pandemic progressed (Pew Research Center, 2020b). Understanding how particular uses of communication technology may contribute to or help curb emotional distress is valuable as we move forward.

One of the most used forms of communication technology today is social media; seven in 10 Americans say they have used social media in the last year (Auxier & Anderson, 2021). This research explored how individuals in the United States coped with social distancing by using various social media and the relationship that use had with measures of subjective well-being during the COVID-19 pandemic. While there is hope that life will return to "normal" as early as late 2021 (see Myers, 2021), reflecting on the use of social media during the pandemic to connect with friends and family can offer insight into best practices for use when face-to-face interaction is not an option. In that regard, this study explored how some uses of social media may contribute to or combat feelings of loneliness and/or negative affect (e.g., nervous, afraid). In contrast, other uses may help increase life satisfaction or positive affect (e.g., active, determined) during the pandemic. The study

E-mail address: natalie.pennington@unlv.edu.

also explored how individuals connected with friends and family outside of the home, conceptualized as strong and weak ties, meet daily social interaction needs.

2. Literature review

2.1. Social interaction and subjective well-being

Regular social interaction is essential to sustain subjective well-being (Baumeister & Leary, 1995; Diener, 2000; Hall, 2020; Hall & Merolla, 2020). Social interaction can be understood as purposively engaging in communication with another individual (Hall, 2018a). For this study, subjective well-being is understood to include overall life satisfaction and feelings of positive affect, and low levels of negative affect and loneliness. Diener (2000) argues that life satisfaction and positive and negative affect are important concepts to provide a more well-rounded understanding of subjective well-being. Relatedly, loneliness has been found to have a negative relationship with life satisfaction and positive affect and a positive relationship with negative affect, making it an ideal measure to include, particularly in the framing of social loneliness (Neto, 2014).

Social interaction can sustain subjective well-being (i.e., greater life satisfaction, decreased loneliness), satiating one's need to belong (Hall & Merolla, 2020). Hall and Merolla point to the value of social interaction with close relationships to combat loneliness. That said, past work has found that communication with weak ties may also contribute to subjective well-being (e.g., Sandstrom & Dunn, 2014). In two separate studies using student and adult samples, Sandstrom and Dunn (2014) found that daily interactions with weak ties were related to subjective well-being. Those who interacted with weak ties experienced greater happiness and belonging. The researchers suggested weak tie connections may be particularly important on days where individuals had fewer interactions with strong ties (Sanderson & Dunn, 2014). Together, these studies highlight how socializing is beneficial to one's subjective well-being, both in the case of strong and weak ties. This is important to keep in mind because, in a typical day pre-pandemic, most of one's communication was with weak rather than strong ties (Hall, 2020). Further, changes in daily life behaviors are related to feelings of depression (Snippe et al., 2016), suggesting an increase or decrease in social behaviors may further contribute to depressive symptoms. As the pandemic removed many opportunities for regular face-to-face (FTF) social interaction with strong ties and weak ties due to stay-at-home orders, the question becomes how individuals can meet social interaction needs outside of the home daily.

2.2. Social media use and subjective well-being

Social media use encompasses a wide range of behaviors, framed primarily as active or passive. Active use (e.g., direct messaging, commenting on posts) has often been associated with minor improvements in subjective well-being (Burke & Kraut, 2016; Escobar-Viera et al., 2018; Frison & Eggermont, 2015; Verduyn et al., 2015, 2017). On a social level, research also supports active use as helping to maintain relationships while providing needed social capital and support (Carpenter et al., 2018; Ellison et al., 2014; McEwan, 2013). Carpenter et al. (2018) found the use of private, direct messaging through Facebook increased closeness in relationships, and McEwan (2013) also noted how engaging one-on-one on Facebook was a way to show caring and subsequently improved satisfaction, liking, and closeness. In terms of well-being, Frison and Eggermont (2015) found that when someone was already lonely and engaged in active public uses of social media (e.g., status updates, commenting), they were able to improve their mental health. This would suggest that active uses of social media may serve a crucial role during the pandemic to sustain one's subjective well-being and relationships. While pre-pandemic, the effect sizes were relatively small for active use across studies; it may be that the absence of FtF interaction may change how social media functions to meet one's needs.

Indeed, when faced with social distancing, the ability to engage in active communication with friends and family through social media could be beneficial to those sheltered in place who want to sustain relationships and have regular social interaction outside of the home.

The use of social media passively (e.g., browsing content online), on the other hand, has often been associated with greater feelings of loneliness and depression and decreased levels of subjective well-being (Escobar-Viera et al., 2018; Frison & Eggermont, 2015; Verduyn et al., 2015, 2017). Given that users often engage in passive behaviors through social media compared to active, the negative effects are particularly concerning (Hall, 2018b; Verduyn et al., 2015). Browsing behaviors on social media have been linked to depressive symptoms (Escobar-Viera et al., 2018; Lup et al., 2015), decreased positive affect (de Vries et al., 2018) and increased loneliness (Frison & Eggermont, 2015). Instagram use, in particular, has been associated with feelings of depression (de Vries et al., 2018; Lup et al., 2015), likely the result of following public figures and influencers through the site. Indeed, studies have identified envy as influencing outcomes; the positive posts made by others on social media can inspire envy and feelings of depression (Lup et al., 2015; Verduyn et al., 2015, 2017). During the pandemic, this may be even more of an issue as individuals grappled with sheltering-in-place versus going out, creating feelings of FOMO (fear of missing out). In addition to depression, a common concern related to passive social media use is loneliness (Verduyn et al., 2015). Frison and Eggermont (2015) found that those who suffered from loneliness to begin with were more likely to engage in passive Facebook use, which in turn led to increased feelings of depression, supporting what they called a "poor get poorer effect" (p. 20). As individuals cope with social distancing during the pandemic, this effect could be amplified absent social interaction outside of the home, reproducing the poor get poorer effect. In reviewing existing literature, Clark et al. (2018) suggest social media may "open the door to loneliness if they are used for "social snacking," or temporary but illusory fulfillment of social needs" (p. 33). In missing social interaction, passive uses of social media may mimic interaction (i. e., social snacking). A concern then during the pandemic is increased passive use, which may perpetuate loneliness.

It is also worth noting that research on social media often speaks to strong ties rather than weak ties. Burke and Kraut's (2016) analysis of communication through Facebook and well-being did find directed (active) communication with strong ties through the site contributed to subjective well-being, while no effect was found for communication with weak ties, consistent with Hall and Merolla's (2020) claims regarding social interaction with strong ties offline. A recent study by Pennington and Hall (2021) also argued that social media is largely a virtual tie sign for weak ties, with a longitudinal analysis finding no growth or change for weak ties even with communication on Facebook. In a world where participants are unable to have FtF contact outside of the home, however, weak tie interactions through the site may contribute to increased subjective well-being, similar to Sanderson and Dunn's (2014) findings on weak tie interactions helping to offset the loss of engagement with strong ties.

Finally, it is important to keep in mind that much of the research on social media that exists often identifies a single site (i.e., only Instagram or only Facebook). To understand potential similarities and differences, Wirtz et al. (2021) assessed the use of Facebook, Twitter, and Instagram as the sites related to negative affect, positive affect, life satisfaction, and stress across 10 days. The study reported that life satisfaction decreased as the use of the sites in aggregate increased and that each site individually contributed to feelings of negative affect. Wirtz et al. also found none of the sites contributed significantly to changes in positive affect, further cementing the idea that, at least during normal circumstances, social media use may have little to no effect on positive mental health outcomes. Recent research from Pennington (2020) also found that those who quit all social media believed they were in a better place with their relationships and mental health by stepping away. Pennington noted how participants felt they had overcome social comparison and

technostress caused by repeated and heavy passive use of social media, in line with past work on the negative effects of passive use. Pennington's (2020) study presumed, however, the opportunity for FtF contact outside of the home as did earlier research; when FtF social interaction is unavailable to most people because of the pandemic, how are one's needs met?

2.3. COVID-19 and subjective well-being

Notably, early research surrounding COVID-19 focused on mental health and subjective well-being as individuals worldwide coped with shelter-in-place and social distancing orders (Holingue et al., 2020; Luchetti et al., 2020; Tull et al., 2020). Findings, however, have been mixed. Luchetti et al. (2020) assessed loneliness at three time points for a nationwide sample of American adults and found no significant difference in loneliness scores over time. Howoever, similar research exploring the effect of sheltering-in-place noted greater health anxiety, financial worry, and loneliness among participants (Tull et al., 2020). Research from Holingue et al. (2020) also found that one in four participants reported experiencing various degrees of psychological distress (operationalized as anxiety, depression, loneliness, trouble sleeping, and other physical reactions) during the pandemic. The latter two studies captured a range of possible outcomes beyond loneliness, accounting for these mixed results. Further work is needed to understand the relationship between social distancing during the pandemic and subjective well-being. Understanding the role technology can play is particularly important to consider given what is known about the relationship between social media use and subjective well-being (e.g., Frison & Eggermont, 2015; Wirtz et al., 2021).

Riehm et al. (2020) assessed the relationship between time spent on social media (minutes per day) and mental distress during the pandemic, finding that more time spent online was associated with greater feelings of mental distress (e.g., anxiety, depression). In this case, however, the study did not account for how social media was being used, which is important as there are considerable differences between how active and passive engagement may influence mental health, as noted previously (e.g., Escobar-Viera et al., 2018; Frison & Eggermont, 2015). Additional work from Zhong et al. (2020) on residents in Wuhan's use of social media also noted increased time spent on social media was related to feelings of depression, but that time online also was a source of support within the community. In exploring past research on communication during times of crisis, such as following natural disasters, studies have found social media was a valuable way to connect, check-in on family and friends, gain support, and improve subjective well-being (Austin et al., 2012; Kaniasty, 2012; Li et al., 2019; Neubaum et al., 2014). This points to the potential for results from this study to apply beyond the pandemic as we consider times when individuals may experience isolation or crisis.

2.4. Study overview and research questions

The current research on COVID-19 offers a compelling argument for being concerned about subjective well-being as many people grapple with social distancing guidelines. Within the literature is an understanding of how communication through social media and with friends and family outside of the home relates to subjective well-being. More specifically, while the extant literature during the pandemic has explored time spent online, it has not explored different uses of social media to sustain well-being. Given that research pre-pandemic identified potential differences in use related to subjective well-being, further study is warranted. Further still, exploring how individuals socially interact with strong and weak ties is also important in considering getting one's needs met. As such, this study posed the following research questions:

RQ1: Is there a relationship between subjective well-being and (a) active social media use and (b) passive social media use during the

ongoing COVID-19 pandemic?

RQ2: How do social media users describe changes in how they engaged with social media to communicate with (a) strong ties and (b) weak ties during the ongoing COVID-19 pandemic?

3. Method

3.1. Participants

Following approval from the Institutional Review Board (IRB), a survey was administered in mid-April 2020 through the research pool at a large southwestern university and Amazon's Mechanical Turk (N=307). Students were awarded partial course credit (<0.05 percent) for completing the survey. Mechanical Turk (MTurk) workers were paid \$1.50 for survey completion. Data were drawn from multiple sources to increase the diversity of the sample (Sheehan, 2018). In total, 395 individuals started the survey, however, roughly 23% of the sample were removed from the analysis due to errors in response to attention check items and/or incomplete surveys. Of those excluded, the majority came from the MTurk sample (97.7%) as opposed to the student sample.

The sample consisted primarily of MTurk workers (n = 200), with the remainder represented by students enrolled in a research pool as part of introductory communication courses (n = 107). A little over half of the participants identified as male (n = 160, 52.1%). Participants identified primarily as Caucasian/White (69.4%), followed by African American/ Black (10.7%), Asian (9.8%), Hispanic/Latino(a) (8.8%), Native American/Indian (3.9%), Pacific Islander (1.3%), and other (0.7%). Those who selected other noted they were Middle Eastern and Multi-racial. Age ranged from 18 to 70 year old (M = 34.22, SD = 12.01). Participants came from all over the United States, with the most heavily represented states including Nevada (16.9%), California (10.1%), New York (6.5%), and Florida (6.2%). A little less than half of the participants (45%) identified as single, while 39.1% identified themselves as married and 13.4% stated they lived with a romantic partner but were not married. The remaining 2.6% identified as "other" for their relationship status, with the most common response given as dating but not cohabitating.

All participants indicated they were currently operating under a stayat-home order because of the pandemic, with 59.9% indicating they had been at home for over a month, and 34.9% stating they had been sheltered in place for 3-4 weeks, with the remainder sheltered at home for 2 weeks or fewer (5.3%). Most of the participants were still employed (75%), with a small percentage still leaving the house to go to work (21.3% of those who identified as employed). Of those who were unemployed, roughly half identified they were let go from their job because of the pandemic (48.1%). Most participants identified they currently lived with at least one other person (86%) with the majority living with 1–3 other individuals in the household (64.5%). Participants were also asked to identify if they were users of Facebook, Twitter, and/ or Instagram. Just over three-quarters of the sample (78.5%) were Facebook users and 68.1% percent of the sample each identified they used Twitter or Instagram; 41.4% of the sample used all three of the sites.

3.2. Procedures

Participants were first provided with an informed consent form on the first page of the survey. Once they agreed to participate, the survey asked participants to report a series of demographic questions and their status relating to the COVID-19 pandemic. Participants completed a series of items related to their perceived subjective well-being and social media engagement following these questions. Finally, participants were asked two open-ended questions that had them reflect on how their use of social media and the perceived value of social media for communication with friends and family may have changed during the pandemic.

3.3. Measures

This study drew on measures related to well-being (loneliness, life satisfaction, PANAS) and social media use (types of engagement and time spent online). Participants were asked to reflect on the last two weeks. With most states in the U.S. under stay-at-home orders for three or more weeks at the time of data collection (Mervosh et al., 2020), two weeks was identified as an ideal timeframe for assessing current well-being and use. What follows is a brief description of each measure.

Loneliness. Neto's (1992) short-form (six-item) UCLA-Loneliness Scale was used. This scale asked participants to consider if they had felt a particular way in the past two weeks, ranging from 1 (never) to 4 (often). Examples of items from this scale include *I feel alone*, and *I am unhappy being so withdrawn*. As noted by Neto (2014), the ULS-6 is ideal for assessing social distancing, which is likely during the pandemic. The scale was highly reliable ($\alpha = 0.91$).

Life Satisfaction. To measure life satisfaction, Diener et al.'s (1985) Satisfaction with Life Scale was used, which includes five items measured on a scale of 1 (strongly disagree) to 5 (strongly agree). Sample items include *in most ways' my life is close to ideal* and *the conditions of my life are excellent*. The scale was reliable ($\alpha = 0.84$).

PANAS. To measure affect, this study used Thompson's (2007) short-form version of Watson et al.'s (1988) Positive and Negative Affect Scale (PANAS). This scale includes 10-total items. Participants were asked to indicate how often they had felt a particular way in the last two weeks ranging from 1 (not at all) to 5 (all the time). Half of the items in the scale were representative of positive affect (*active*, *determined*, *attentive*, *inspired*, *alert*), and half the items were representative of negative affect (*afraid*, *nervous*, *upset*, *hostile*, *ashamed*). Scores for each were summed to represent the presence of positive and negative affect for each participant (lowest positive score = 5, highest possible score = 25). Both negative affect ($\alpha = 0.87$) and positive affect ($\alpha = 0.86$) were reliable.

Social Media Use. Participants were asked to consider the sites they used collectively (Facebook, Twitter, and/or Instagram) to answer a series of questions regarding actions they had taken on social media in the last two weeks. Items were derived from past research on social media use (Pennington & Hall, 2021) and recent work identifying novel uses of social media during the pandemic (Pew Research Center, 2020a). Seven actions were measured on a scale of 1 (not at all) to 5 (daily). Five of the actions represented active uses of social media: I posted on social media (e.g., status update, tweet, picture), I commented on posts made by my friends/followers, I sent direct or private messages to my friends/followers, I 'liked' or 'reacted' to posts made by my friends/followers, and I organized or held digital social gatherings through social media. The remaining two actions represented passive social media use: I browsed content shared by my friends/followers and I clicked on profiles/pages that I don't follow to browse their content. In addition to specific ways to engage with social media, participants were also asked to identify how much they spent daily, on average, using each site they engaged with in the past two weeks ranging from 1 (15 min or less) to 7 (91+ minutes).

3.4. Coded data analysis

In addition to the quantitative measures noted above, open-ended responses from participants were qualitatively analyzed to answer RQ2. Not all participants answered both questions, amounting to 481 text boxes consisting of, on average, 2–3 sentences each. Thematic analysis (Braun & Clarke, 2006) was used to assess the data. In the first step, I gained familiarity with the data by reading and re-reading through the responses. From there, I created initial codes in line with RQ2. In reviewing the codes, two primary themes emerged: increased use and reconnection. Examples of initial codes related to increased use include constantly checking the feed and reading more pages/profiles. Initial codes for reconnection include messaging old friends and family and friending a lapsed tie. I then reviewed the two themes in relation to the

data (both in terms of the codes established and the full dataset), labeled them, and identified representative exemplars from the data for inclusion to complete the analysis (Braun & Clarke, 2006).

4. Results

Before assessing the research questions, *t*-tests were conducted to determine if there were any significant differences in reporting by the MTurk sample compared to the student sample. As no significant differences were found, the two samples were grouped for subsequent analysis and answering of the research questions. In examining composite means, participants generally reported they were satisfied with their life but had, to a lesser degree, experienced both negative emotions and loneliness in the past two weeks. Participants also reported, on average, equal engagement with both active and passive uses of social media, as seen in the composite mean scores (see Table 1).

4.1. Quantitative analysis

RQ1 asked if there was a relationship between social media use and well-being during the pandemic. The initial correlation analysis (Table 1) showed loneliness was positively correlated with both active (direct messaging, virtual gatherings) and passive (browsing followers and non-followers) uses of social media. All measures of active and passive social media use except for reacting to posts were positively correlated with negative affect, as was time spent on Twitter. Finally, life satisfaction and positive affect were each positively associated with all active and passive uses of social media measured, as well as time spent on Facebook. Importantly, correlations between the outcome variables and use were relatively small (<0.30), except in the case of organizing virtual gatherings (r ranged from 0.19 to 0.47) and posting and commenting behaviors and positive affect (r = 0.34 for each).

Additional regression analysis was conducted to assess each outcome variable further. Controlling for the number of people in the home, age, and gender (female), the results for loneliness, positive affect, and life satisfaction were significant, however the effects were generally small. For loneliness (F(13,114) = 2.19, p = .01), four variables contributed significantly to the final model: sending direct messages ($\beta = 0.26$, p =.01), reacting to a post ($\beta = -0.28$, p = .01), browsing the profile of a non-follower ($\beta = 0.23, p = .02$), and time spent on Twitter ($\beta = 0.26, p$ = .02). Control variables accounted for 4.9% of the variance in scores, with social media use accounting for an additional 15.1%. For life satisfaction (F(13,114) = 1.92, p = .03), only one variable contributed significantly to the final model: browsing the profile of a non-follower (β =-0.26, p=.01). Control variables accounted for 4.7% of the variance in scores, with social media use accounting for an additional 13.4%. For positive affect (F(13,114) = 2.57, p = .004), two variables contributed significantly to the final model: Age ($\beta = 0.20$, p = .03) and organizing digital social gatherings ($\beta = 0.21, p = .04$). Control variables accounted for 5% of the variance in scores, with social media use accounting for an additional 17.6%. Finally, the model for negative affect (F(13,114) =1.6, p = .40) was not significant.

4.2. Qualitative analysis

To address RQ2, participants were asked to discuss how their communication through social media with friends and family outside of the home had changed during the COVID-19 pandemic. Using qualitative thematic analysis to code the open-ended responses provided, two themes emerged from the data: *increased use* and *reconnection*.

4.2.1. Increased use

Participants overwhelmingly identified an increase in the use of social media during the pandemic, often directly in relation to the loss of FtF contact. One participant noted, "I am using it more often than before, given that I am at home," while another shared, "I am using social media

Table 1Means, SD, and correlation matrix for all variables.

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Subjective															
Well-being															
 Loneliness 	2.21	.71	-												
Life satisfaction	4.80	1.40	33***	-											
3. Negative affect	11.28	5.31	.53***	.03	-										
4. Positive affect	17.23	4.28	23***	.49***	.04	_									
Social media use															
5. Posted	3.05	1.32	.07	.18***	.21***	.34***	_								
6. Commented	3.35	1.28	.00	.21***	.16**	.34***	.63***	_							
7. Direct messaged	3.38	1.32	.13**	.17***	.15**	.24***	.46***	.49***	_						
8. Reacted to posts	3.79	1.19	09	.12*	.01	.19***	.41***	.55***	.40***	_					
9. Browsed followers' content	3.42	1.23	.15**	.15**	.21***	.26***	.36***	.39***	.35***	.26***	-				
10. Browsed non-followers' content	3.25	1.28	.22***	.12*	.31***	.21***	.37***	.32***	.32***	.22***	.54***	-			
11. Organized virtual gatherings	2.29	1.38	.19***	.34***	.47***	.38***	.44***	.36***	.30***	.08	.40***	.47***	-		
12. Time on Facebook	3.31	1.69	02	.16**	.10	.14**	.26***	.35***	.27***	.23***	.07	.11*	.21***	_	
13. Time on Twitter	3.23	1.74	.10	.03	.14*	.09	.21***	.27***	.13*	.19**	.17**	.18**	.17**	.47***	-
14. Time on Instagram	3.38	1.74	.04	.06	.11	.01	.12	.21***	.21***	.18**	.23***	.25***	.26***	.49***	.55***

Notes: ***p < .001, **p < .01, *p < .05, total N = 307, Facebook Use (n = 242), Twitter Use (n = 209), Instagram Use (n = 209).

more since I have been social distancing. It helped me feel more connected and a part of people's lives." Several participants stated they were "dependent" on social media during the pandemic, while others still used words like "immersed," "living on," and "a needed distraction" to explain their increased use. Typical active uses of social media prepandemic (e.g., posting, direct messaging) were reported as lower for many participants, replaced primarily with scrolling and reading content posted online. One participant noted, "My usage has gone up, but I'm not necessarily more active, I just watch more videos, skim my feed to see what is new," and another wrote, "I would just say I'm more of a 'lurker' now since I have so much time on my hands." Repeatedly participants noted that shelter-in-place orders keeping them at home led them to pick up their phone and scroll through the different social media they used to pass the time. Without anything to do, however, this rarely led to posting or other active uses to connect with others on the site, instead amounting often to "social snacking" behaviors to momentarily feel connection online.

4.2.2. Relational reconnection

While a good number of participants reported a more passive relationship with social media during the pandemic, for some, the initial passive act of checking in on old friends and family online led to an opportunity to reconnect. One participant noted, "it seems like people on social media are more eager to talk and make connections to fill the void in their lives that has been created by social distancing." Another wrote, "I have found myself chatting with old friends" in discussing how their use had changed. Another participant shared, "I have been reconnecting with my best friends from high school, which I have really enjoyed." Other users also noted they were connecting more with people who did not live nearby to check in-this was most often about extended family members. In line with the theme shared above (increased use), participants also discussed scrolling old friends and family's profiles to check in with them because they had not talked in a while, something they had not done pre-pandemic. These participants often noted that concern about that person and how they were doing as a direct result of the pandemic led them to use social media to check in on them. Passive viewing did not always result in active engagement but gave participants peace of mind that people they cared about were doing ok. Missing from responses were direct comments regarding weak ties in the sense of acquaintances; however. In this way, reconnection was reserved for relationships that, while weak at the start of the pandemic, were viewed as strong enough to warrant reconnecting going forward (e.g., old best friend, family).

5. Discussion

While the pandemic will end, there is value in assessing how individuals use communication technology during this time as it relates to subjective well-being (Guitton, 2020). Identifying how social interaction needs can be met during the pandemic is crucial in helping individuals cope with stress during global crises (Van Bavel et al., 2020). In evaluating how individuals engaged in social interaction outside of the home through social media, the present study underscores the potential negative effects of passively browsing content online. The results also speak to the benefits and drawbacks of active use; while past research generally saw active use as beneficial (e.g., Burke & Kraut, 2016; Frison & Eggermont, 2015), current findings suggest active use was both helpful and harmful to one's subjective well-being during the pandemic. What follows is a discussion of the results in relation to the existing literature and what it means for best practices in social media use during this time.

5.1. Passive and active use of social media

In support of past research on social media use, the results of the present study point most heavily to the drawbacks of passive engagement (e.g., Escobar-Viera et al., 2018; Frison & Eggermont, 2015; Verduyn et al., 2015, 2017). This study found that browsing content from non-followers/friends increased loneliness and decreased life satisfaction. The qualitative findings (RQ2) may offer some context of the "why" for these behaviors; participants admitted to seeking out and checking in on old relationships through social media as standard practice during the pandemic and an increased passive use through scrolling and reading their feeds. While participants stated they made contact to reconnect in some cases, other times, they passively consumed content about an old friend to see what they were up to during the pandemic. These findings provide support for Clark et al.'s (2018) concern regarding social snacking; the act of passive social media use momentarily created feelings of connection but ultimately failed to sustain one's subjective well-being over time (e.g., "empty calories"). This is likely what played out with participants based on the qualitative and quantitative results; seeking social connection, participants would browse the social media of their choice, but failure to connect resulted in greater loneliness and decreased life satisfaction.

Results also call attention to time spent on Twitter, which contributed to an increase in loneliness. Notably, a study from Gao et al. (2020) assessed the consumption of news through social media during the

pandemic, finding it contributing to increased depression and anxiety. As users are more likely to connect with public accounts that are not friends and family through sites like Twitter, it would follow that news consumption through these sites was higher compared to Facebook or Instagram, contributing to feelings of loneliness as they were reminded of the ongoing pandemic. Gao's work aligns with Holingue et al.'s (2020) research which also found that using social media to talk about COVID-19 increased feelings of mental distress. It is important to note that the data shared from the present study did not assess news consumption specifically, and future research would benefit from making sense of these findings as it relates to different sites and their use. It is also important to note that while browsing one's newsfeed was correlated with all four outcomes (loneliness, life satisfaction, negative affect, positive affect), this behavior failed to contribute significantly to any of the regression models. Instead, browsing specific content (non-followers) contributed most heavily to greater loneliness and concerns with life satisfaction.

Active uses of social media had mixed results in the present study. While participants reported greater feelings of positive affect by using social media to organize digital gatherings and less loneliness when they engaged in "reacting" to posts, the use of direct messaging on social media increased feelings of loneliness. The latter finding is consistent with past research that found that while individuals can feel connected and gain support using communication technologies with friends and family, they may still experience feelings of loneliness (Hall, 2020; Twenge et al., 2019; Zhong et al., 2020). In particular, Twenge et al. (2019) note in their study that young people with low levels of FtF social interaction, and high use of social media, were the loneliest. As the pandemic often prevented FtF social interaction, it would follow that participant's loneliness was higher as a result. This was supported by research from Hall et al. (2021) exploring the relationship between communication technology and subjective well-being during the pandemic, which found that only phone calls and FtF communication helped to combat loneliness, while all forms of social media use contributed to greater loneliness and stress. Taken together, this emphasizes how, outside of the pandemic, social media may be helpful as a supplemental form of social interaction. However, with a decrease in FtF contact, it may cause more harm than good as a primary form of contact.

5.2. Reconnection

In line with active use, reconnection was identified as a common theme for individuals using social media during the pandemic. Openended responses from participants highlighted an increase in communication with previously lapsed tie connections through social media as well as checking in on long-distance family and friends. Relational reconnection has previously been identified as a potential benefit of social media (e.g., Ramirez et al., 2017), so it does not come as a surprise that participants were taking the opportunity to reconnect online with old friends and family. The effort to reconnect and check in on family and friends is consistent with past work considering the use of social media during times of crisis (Austin et al., 2012). In their assessment of social media use during potential crises (e.g., bomb threat, blizzard, disease outbreak), Austin et al. found that participants turned to social media as an easy way to check on the well-being of friends and family. As participants were faced with a crisis (global pandemic), they turned to social media to reconnect and check in on friends and family.

6. Conclusion

As individuals sheltered in place and missed out on countless opportunities for social interaction, social media became a primary outlet for those seeking connection. Consistent with past research, this study found that how one engaged related to subjective well-being. While effect sizes were small, the findings can help to identify best practices in use. Limiting time on social media may help avoid increased feelings of loneliness, as both passive and active uses contributed to greater feelings of loneliness and a decrease in life satisfaction. While users may be inclined to check in on old friends and family during the pandemic, as was seen in both the qualitative findings of reconnection and quantitative findings of browsing non-friends/followers, checking in on nonfollowers/friends also contributed to a decrease in life satisfaction for participants. Importantly, browsing non-friends/followers may encompass reading content from public figures and news sources, which was not explicitly measured in this study. This supports past work on news consumption during the pandemic (e.g., Gao et al., 2020) and the drawbacks of social comparison that may come about from social media use (e.g., Lup et al., 2015.

Those who organized virtual hangouts through social media did report higher levels of positive affect; suggesting that finding creative ways to connect outside of the house during the pandemic can help meet social connection needs. In this regard, social media may serve as the launching point to boost one's mood before using other forms of technology to connect (e.g., video calls). Ultimately, users would be best served to seek balance in their social media use and seek out active communication outside of social media when possible.

6.1. Limitations

The present study was not without limitations. There have been concerns voiced about the validity of responses through MTurk (Sheehan, 2018). This study took several precautions to ensure the data was both valid and reliable. Attention checks were used to ensure high-quality and reliable data (Rouse, 2015), resulting in the loss of 23% of the original sample, primarily from MTurk. Additional analysis comparing the MTurk and student sample also found no significant differences in reporting, as highlighted in the methods. Past research also supports the use of MTurk to assess relational and mental health processes (Schleider & Weisz, 2015). That said, future work that uses a population-based sample would help assess the generalizability of the findings of this study to the public and guidelines for best practices.

It is also important to note that many of the participants in the present study were still employed and living with at least one other person. In terms of those who may be most negatively affected by the pandemic, additional research that looks at how technology can facilitate connection for those who lack regular contact outside of the home (work) and inside of the home (living alone) would help to give a complete picture of the potential benefits and drawbacks of engagement. Finally, the qualitative data explored was limited in scope. As this data was part of a survey design, I could not ask follow-up questions to better understand participants responses, and as such, these findings should be seen as a starting point for future research. The inclusion of this data and qualitative review is valuable to add dimension to the data and participants through triangulation (Benoit & Holbert, 2008).

6.2. Future directions

In line with the limitations, future work should build on the qualitative findings addressed in this study. More specifically, the increase in relational reconnection and check-in behaviors identified by participants should be explored further. Research from Austin et al. (2012) found that checking in with friends/family was a primary use of social media during a crisis, which likely explains these choices. While that initial check-in may prove beneficial to soothe concerns, the quantitative findings suggest that reading content from non-friends/followers online contributed to loneliness and decreased life satisfaction. While browsing likely encompassed a wide range of possible connections ranging from old friends to public figures, understanding how relational reconnection and checking in behaviors may increase during a crisis is valuable in understanding subjective well-being during the pandemic.

Future research would also benefit from continuing to assess potential differences concerning age. As noted previously, early analysis

from the pandemic suggested young people may be struggling more so than older adults (Pew Research Center, 2020b). This study found that older participants experienced greater feelings of positive affect compared to younger participants; however, no significant findings were found regarding age and loneliness or life satisfaction in the present study. As this study focused specifically on social media use, it may also be that age effects are seen in other forms of communication technology.

Finally, in building from this study, future work would also benefit from continuing making sense of differences in use as it relates to connection with strong versus weak tie relationships. While this study found through the qualitative analysis of open-ended responses that users were reconnecting with friends and family during the pandemic, participants rarely spoke of interactions with weak ties. Given that weak tie social interactions have been identified as beneficial in the existing literature (e.g., Sanderson & Dunn, 2014), future work exploring the loss of these interactions during the pandemic may help assess the long-term consequences of the pandemic. As individuals find themselves in a time of crisis, the need to connect with their network increases to make sense of their emotions and gain information about the world around them (Austin et al., 2012; Neubaum et al., 2014). Additional research exploring the occurrence of and engagement with weak ties compared to strong ties may help to point to opportunities within mediated communication that can offset the lack of FtF contact many have experienced because of the pandemic.

Disclosure statement

There are no potential conflicts of interest reported by the author.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Austin, L., Liu, B. F., & Jin, Y. (2012). How audiences seek out crisis information: Exploring the social-mediated crisis communication model. *Journal of Applied Communication Research*, 40(2), 188–207. https://doi.org/10.1080/ 00909882 2012 654498
- Auxier, B., & Anderson, M. (2021, April 7). Social media use in 2021. Pew research center. https://www.pewresearch.org/internet/2021/04/07/social-media-use-in -2021/
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497–529. https://doi.org/10.1037/0033-2909.117.3.497.
- Benoit, W. L., & Holbert, R. (2008). Empirical intersections in communication research: Replication, multiple quantitative methods, and bridging the quantitative-qualitative divide. *Journal of Communication*, 58(4), 615–628. https://doi.org/10.1111/j.1460-2466.2008.00404.x.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa.
- Burke, M., & Kraut, R. (2016). The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of Computer-Mediated Communication*, 21, 265–281. https://doi.org/10.1111/jcc4.12162.
- Carpenter, J., Green, M., & Laflam, J. (2018). Just between us: Exclusive communications in online social networks. *The Journal of Social Psychology*, 158, 405–420. https://doi.org/10.1080/00224545.2018.1431603.
- Clark, J. L., Algoe, S. B., & Green, M. C. (2018). Social network sites and well-being: The role of social connection. *Current Directions in Psychological Science*, 27(1), 32–37. https://doi.org/10.1177/0963721417730833.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. American Psychologist, 55(1), 34–43. https://doi.org/10.1037/0003-066X.55.1.34.

- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. https://doi.org/10.1207/ s15327752jna4901.13
- Ellison, N. B., Vitak, J., Gray, R., & Lampe, C. (2014). Cultivating social resources on social network sites: Facebook relationship maintenance behaviors and their role in social capital processes. *Journal of Computer-Mediated Communication*, 19, 855–870. https://doi.org/10.1111/jcc4.12078.
- Escobar-Viera, C. G., Shensa, A., Bowman, N. D., Sidani, J. E., Knight, J., James, A. E., & Primack, B. A. (2018). Passive and active social media use and depressive symptoms among United States adults. Cyberpsychology, Behavior, and Social Networking, 21(7), 437-443. https://doi.org/10.1089/cyber.2017.0668.
- Frison, E., & Eggermont, S. (2015). Toward an integrated and differential approach to the relationships between loneliness, different types of Facebook use, and adolescents' depressed mood. Communication Research, 1–28. https://doi.org/10.1177/ 0093650215617506
- Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Wang, Y., Fu, H., & Dia, J. (2020). Mental health process and social media exposure during COVID-19 outbreak. *PloS One*, 15(4), 1–10. https://doi.org/10.1371/journal.pone.0231924.
- Guitton, M. J. (2020). Cyberpsychology research and COVID-19. Computers in Human Behavior, 111, 1. https://doi.org/10.1016/j.chb.2020.106357, 1.
- Hall, J. A. (2018a). When is social media use social interaction? *New Media & Society, 20,* 162–179. https://doi.org/10.1177/1461444816660782.
- Hall, J. A. (2018b). Energy, episode, and relationship: A test of communicate bond belong theory. Communication Quarterly, 66, 380–402. https://doi.org/10.1080/ 01463373.2017.1411377
- Hall, J. A. (2020). Relating through technology. Cambridge, UK: Cambridge University Press.
- Hall, J. A., & Merolla, A. J. (2020). Connecting everyday talk and time alone to global well-being. *Human Communication Research*, 46(1), 86–111. https://doi.org/ 10.1093/hcr/hqz014.
- Hall, J. A., Pennington, N., & Holmstrom, A. (2021). Connecting through technology during COVID-19. Human Communication & Technology, 2(1), 1–18. https://doi.org/ 10.17161/hct.v3i1.15026.
- Holingue, C., Badillo-Coicoechea, E., Riehm, K. E., Veldhuis, C. B., Thrul, J., Johnson, R. M., Fallin, M. D., Kreuter, F., Stuart, E. A., & Kalb, L. G. (2020). Mental distress during COVID-19 pandemic among US adults without a pre-existing mental health condition: Findings from American trend panel survey. *Preventive Medicine*, 139, 1–8. https://doi.org/10.1016/j.ypmed.2020.106231.
- Kaniasty, K. (2012). Predicting social psychological well-being following trauma: The role of post-disaster social support. Psychological Trauma: Theory, Research, Practice, and Policy, 4(1), 22–33. https://doi.org/10.1037/a0021412.
- Li, J., Stephens, K. K., Zhu, Y., & Murthy, D. (2019). Using social media to call for help in Hurricane Harvey: Bonding emotion, culture, and community relationships. *International Journal of Disaster Risk Reduction*, 38, 1–8. https://doi.org/10.1016/j. iidrr.2019.101212.
- Luchetti, M., Lee, J. H., Aschwanden, D., Sesker, A., Strickhouser, J. E., Terracciano, A., & Sutin, A. R. (2020). The trajectory of loneliness in response to COVID-19. American Psychologist. https://doi.org/10.1037/amp0000690.
- Lup, K., Trub, L., & Rosenthal, L. (2015). Instagram #instasad? Exploring associations among Instagram use, depressive symptoms, negative social comparison, and strangers followed. Cyberpsychology, Behavior, and Social Networking, 18(5), 247-252. https://doi.org/10.1089/cyber.2014.0560.
- McEwan, B. (2013). Caring, sharing, and surveilling: An actor-partner interdependence model examination of Facebook relational maintenance strategies. Cyberpsychology, Behavior, and Social Networking, 16, 863–869. https://doi.org/10.1089/ cyber.2012.0717.
- Mervosh, S., Lu, D., & Swales, V. (2020). See which states and cities have told residents to stay at home. The New York Times. https://www.nytimes.com/interactive/2020/us/coronavirus-stay-at-home-order.html.
- Myers, J. (2021). When will life return to 'pre-COVID normal'? World economic forum. https://www.weforum.org/agenda/2021/04/normal-pre-covid-post-pandemic/.
- Neto, F. (2014). Psychometric analysis of the short-form UCLA Loneliness Scale (ULS-6) in older adults. European Journal of Ageing, 11(4), 313–319. https://doi.org/10.1007/s10433-014-0312-1.
- Neubaum, G., Rosner, L., Rösenthal-von der Pütten, A. M., & Krämer, N. C. (2014). Psychosocial functions of social media usage in a disaster situation: A multi-methodological approach. Computers in Human Behavior, 34, 28–38. https://doi.org/10.1016/j.chb.2014.01.021.
- Pennington, N. (2020). Quitting social media: a qualitative exploration of communication outcomes. *Qualitative Research Reports in Communication*, 1–10. https://doi.org/10.1080/17459435.2020.1817140.
- Pennington, N., & Hall, J. A. (2021). Does Facebook-enabled communication influence weak-tie relationships over time? A longitudinal investigation into mediated relationship maintenance. *Communication Monographs*, 88(1), 48–70. https://doi. org/10.1080/03637751.2020.1854476.
- Pew Research Center. (2020a). From virtual parties to ordering food, how Americans are using the internet during COVID-19. https://www.pewresearch.org/fact-tank/202 0/04/30/from-virtual-parties-to-ordering-food-how-americans-are-using-the-intern et-during-covid-19/.
- Pew Research Center. (2020b). Experiences with the COVID-19 outbreak can vary for Americans of different ages. https://www.pewresearch.org/fact-tank/2020/06/16/experiences-with-the-covid-19-outbreak-can-vary-for-americans-of-different ages/
- Ramirez, A., Jr., Sumner, E. M., & Spinda, J. (2017). The relational reconnection function of social network sites. 19 pp. 807–825). New Media & Society. https://doi.org/ 10.1177/1461444815614199, 6.

- Riehm, K. E., Holingue, C., Kalb, L. G., Bennett, D., Kapteyn, A., Jiang, Q., ... Thrul, J. (2020). Associations between media exposure and mental distress among U.S. adults at the beginning of the COVID-19 pandemic. *American Journal of Preventive Medicine*, 59(5), 630–638. https://doi.org/10.1016/j.amepre.2020.06.008.
- Rouse, S. V. (2015). A reliability analysis of Mechanical Turk data. Computers in Human Behavior, 43, 304–307. https://doi.org/10.1016/j.chb.2014.11.004.
- Sandstrom, G. M., & Dunn, E. W. (2014). Social interactions and well-being: The surprising power of weak ties. *Personality and Social Psychology Bulletin*, 40(7), 910–922. https://doi.org/10.1177/0146167214529799.
- Schleider, J. L., & Weisz, J. R. (2015). Using mechanical Turk to study family processes and youth mental health: A test of feasibility. *Journal of Child and Family Studies*, 24, 3235–3246. https://doi.org/10.1007/s10826-015-0126-6.
- Sheehan, K. B. (2018). Crowdsourcing research: Data collection with Amazon's mechanical Turk. Communication Monographs, 85, 140–156. https://doi.org/ 10.1080/03637751.2017.1342043.
- Snippe, E., Simons, C. J. P., Hartmann, J. A., Menne-Lothman, C., Kramer, I., Booij, S. H., Viechtbauer, W., Delespaul, P., Myin-Germeys, I., & Wichers, M. (2016). Change in daily life behaviors and depression: Within-person and between-person associations. *Health Psychology*, 35(5), 433–441. https://doi.org/10.1037/hea0000312.
- Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the positive and negative affect schedule (PANAS). *Journal of Cross-Cultural Psychology*, 38(2), 227–242. https://doi.org/10.1177/0022022106297301.
- Tull, M. T., Edmonds, K. A., Scamaldo, K. M., Richmond, J. R., Rose, J. P., & Gratz, K. L. (2020). Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. Psychiatry Research, 289, 1–6. https://doi.org/10.1016/j.psychres.2020.113098.
- Twenge, J. M., Spitzberg, B. H., & Campbell, W. K. (2019). Less in-person social interaction with peers among U.S. adolescents in the 21st century links to loneliness. *Journal of Social and Personal Relationships*, 36(6), 1892–1913. https://doi.org/10.1177/0265407519836170.

- Van Bavel, J. J., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., & Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. Nature Human Behaviour, 4, 460–471. https://doi.org/10.1038/s41562.020.0884.x
- Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, 144(2), 480–488. https://doi.org/10.1037/xge0000057.
- Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. Social Issues and Policy Review, 11(1), 274–302. https://doi.org/10.1111/sipr.12033.
- de Vries, D. A., Möller, A. M., Weiringa, M. S., Eigenraam, A. W., & Hamelink, K. (2018). Social comparison as the thief of joy: Emotional consequences of viewing strangers' Instagram posts. *Media Psychology*, 21(2), 222–245. https://doi.org/10.1080/ 15213269 2016 1267647
- Wirtz, D., Tucker, A., Briggs, C., & Schoemann, A. M. (2021). How and why social media affect subjective well-being: Multi-site use and social comparison as predictors of change across time. *Journal of Happiness Studies*, 22, 1673–1691. https://doi.org/ 10.1007/s10902-020-00291-z.
- Zhong, B., Huang, Y., & Liu, Q. (2020). Mental health toll from the coronavirus: Social media usage reveals Wuhan residents' depression and secondary trauma in the COVID-19 outbreak. Computers in Human Behavior, 114, 1–10. https://doi.org/10.1016/j.chb.2020.106524.

Natalie Pennington (PhD, University of Kansas) is an assistant professor of Communication Studies at the University of Nevada, Las Vegas. Dr. Pennington's research focuses primarily on the role of communication technology within interpersonal relationships. Email: natalie.pennington@unlv.edu