


Divergent effects of social media use on meaning in life via loneliness and existential isolation during the coronavirus pandemic

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Abstract

Stay-at-home orders issued to combat the growing number of infections during the coronavirus pandemic in 2020 had many psychological consequences for people including elevated stress, anxiety, and difficulty maintaining meaning in their lives. The present studies utilized cross-sectional designs and were conducted to better understand how social media usage related to people's subjective isolation (i.e., social loneliness, emotional loneliness, and existential isolation) and meaning in life (MIL) during the early months of the pandemic within the United States. Study 1 found that general social media use indirectly predicted higher MIL via lower existential isolation and social isolation. Study 2 replicated these patterns and found that social media use also predicted lower MIL via higher emotional loneliness, and that the aforementioned effects occurred with active, but not passive, social media use. Findings suggest social media use may be a viable means to validate one's experiences (i.e., reduce existential isolation) during the pandemic but may also lead to intensified feelings concerning missing others (i.e., increased emotional loneliness). This research also helps to identify potential divergent effects of social media on MIL and helps to clarify the relationships among varying types of subjective isolation.

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The world experienced a rapid unfolding of the COVID-19 virus in 2020. Due to public health concerns, daily life began to undergo drastic changes: state of emergencies were declared, many schools and jobs moved online, all against the backdrop of soaring death tolls. In the United States, by March 26th, 21 states were under stay-at-home orders, and with approximately 1200 national deaths, the United States became the world leader in COVID-19 cases. By April 24th, nearly 50,000 people had died from COVID-19 in the United States, millions had lost their jobs, and anti-lockdown protests surged in state capitals. Not surprisingly, these events have had rippling psychological impacts (Pfefferbaum & North, 2020), challenging people's ability to maintain a sense of meaning in life (MIL—the subjective experience that one's life feels significant at any given time; King et al., 2016), and elevating stress and anxiety (Trzebiński et al., 2020).

During a time in which stay-at-home orders led millions of people to remain largely isolated from friends, family, and co-workers, people were more at risk for feelings of loneliness and for deleterious effects on mental health (Banerjee & Rai, 2020; Berg-Weger & Morley, 2020; Usher et al., 2020). One way that people contended with this unique period of social isolation, was by using social media (Gebel, 2020; Handley, 2020). According to some reports, 32% of Americans spent more time on social media during the pandemic than they did before (Statista, 2020). For example, Facebook.com experienced a 27% increase in traffic between February 29th, 2020 and March 24th, 2020 (Keeze & Popper, 2020), though there are likely many reasons for this shift.

A critical question, then, is how social media consumption impacted people's ability to maintain what scholars have long maintained are a critical pillar of well-being—perceptions of MIL (Zika & Chamberlain, 1992)—during a pandemic that may render such perceptions especially challenging. One possibility is that social media use could help to combat loneliness and isolation, and in turn, enable people to maintain meaning during the early phases of the pandemic. The present studies examined this broad possibility while also considering that social media use may have a multifaceted influence on MIL through different types of subjective isolation.

Social media use, meaning, and well-being

Social media broadly refers to internet based networks that enable users to interact with others verbally and/or visually (Carr & Hayes, 2015) and offers a way for people to consume and disseminate information in a variety of methods (e.g., text messaging, video messaging, and sharing and commenting on photos), including information on the pandemic (Allington et al., 2020; Cinelli et al., 2020). Social media use is quite common, with about 70% of the US population reporting having ever used social media, with the majority visiting social media sites daily (Pew Research Center, 2019).

Evidence regarding how social media affects well-being is mixed. Some research suggests that social media use has negative well-being outcomes, such as fatigue, poor sleep quality, stress (Dhir et al., 2018; Woods & Scott, 2016), social comparison (Verduyn et al., 2015), lower self-esteem (Woods & Scott, 2016), as well as depression (Seabrook et al., 2016; Vannucci & Ohannessian, 2019), anxiety (Dhir et al., 2018; Vannucci et al., 2017; Woods & Scott, 2016), and psychological distress (Marino et al., 2018). Recent work highlights that social media exposure related to COVID-19 was also related to depression and anxiety (Gao et al., 2020). Still, other research suggests more positive outcomes of social media use, such as greater life satisfaction (Burke & Kraut, 2016), and reduced loneliness (Burke & Kraut, 2016; Deters & Mehl, 2013). These mixed results point to the heterogeneity of social media use. A meta-analysis on online communication (including social media) and well-being revealed that time spent on social media and content consumption (browsing/searching) was negatively related to overall well-being (mental health, self-esteem, and life satisfaction), whereas number of friends and interactions (messaging or commenting) was positively related to overall well-being (Meier & Reinecke, 2020). Further, social media use was associated with greater well-being when maintaining existing relationships, but lower well-being creating new relationships (Rae & Lonborg, 2015). Relatedly, passive social media use (i.e., not directly communicating with others) has been found to lower well-being (e.g., Fardouly et al., 2015; Krasnova et al., 2015; Shaw et al., 2015; Wenninger et al., 2014), whereas active social media use (i.e., directly communicating with others) is related to greater well-being (Burke et al., 2010; Kim et al., 2013; Verduyn et al., 2015; Wenninger et al., 2014).

Additionally, research has yet to examine the impact of social media use on MIL. MIL is a key aspect of psychological well-being and is associated with a multitude of health benefits (see King et al., 2016 for a review), and while adverse experiences lower perceptions of MIL, finding meaning during such times predicts better well-being (Edwards & Van Tongeren, 2019). During a pandemic, maintaining a sense of MIL can be important for protecting against psychological consequences from the pandemic (Lin, 2021). This manuscript examines social media as a predictor of MIL, to the extent that social media promotes or detracts different facets of subjective isolation during the pandemic.

Using social media to contend with loneliness and isolation

One reason social media use can affect people's meaning is that it provides an opportunity to enhance social connections and thus reduce loneliness. As humans are social creatures (Hall & Davis, 2017), social connections are key to psychological flourishing, including to create and perpetuate meaning (e.g., Berger & Luckmann, 1966; Echterhoff, et al., 2009; Greenberg et al., 2008). This socially constructed meaning can range from confidence in one's basic conceptions of reality (Festinger, 1954) and in one's ability to predict and control the world (Swann et al., 1992) to how one conceptualizes the self and one's cultural worldview (Arndt et al., 2013). Further, as the Communicate Bond Belong Theory (Hall & Davis, 2017) posits, human's need to belong (Baumeister & Leary, 1995) may motivate social interactions that build communal relationships with close others.

Indeed, time communicating and type of communication (e.g., affectionate, meaningful talk, catching up, and joking around) with others are related to greater closeness (Hall, 2019) as well as reduced loneliness and greater subjective well-being (Hall, 2018). As social media can provide a platform for such communication (via shared content and messaging), its use may fulfill social interactions to build relationships (e.g., through greater social support) that can then lead to greater psychological benefits, including MIL, particularly during a time of a pandemic where other forms of connecting are inhibited.

In support of this, Facebook use was related to greater perceived social support particularly from close-others (Burke & Kraut, 2016). Further, two recent meta-analyses have confirmed a positive association between social media use and social support (Domahidi, 2018; Liu et al., 2018). Research has also largely found a negative association between social media use and loneliness (e.g., Lou et al., 2012; Pittman & Reich, 2016; Thomas et al., 2020). Experimental studies support this general finding, such that participants instructed to post more frequent status updates on social media reported greater perceptions of social connectedness and less loneliness compared to participants who received no such instructions (Deters & Mehl, 2013). Similarly, participants explicitly told not to use social media for 2 days reported less belonging than those told to use social media as usual (Tobin et al., 2014). Finally, another meta-analysis supports the prediction that receiving social support via social media was associated with reduced loneliness as well as improved well-being (Gilmour et al., 2020).

Theory and research suggest that social media's tendency to reduce loneliness might help to bolster MIL. Indeed, there is a consensus in the literature that loneliness tends to be related to lower MIL (e.g., Hicks et al., 2010). In one such study, Stillman and colleagues (2009) found loneliness predicted less MIL, and that excluded individuals tend to report life as less meaningful. Moreover, a sense of belonging is an important predictor of greater MIL (Lambert et al., 2013).

Based on prior literature, if social media use offers a means to connect with others, and if strong social connections contribute to meaning and well-being, then social media use should increase one's sense of meaning. Of course, social media should only increase meaning if it actually leads someone to feel connected and therefore less lonely. However, loneliness is only one form of subjective isolation and social media use may differentially impact different forms of isolation.

Three forms of subjective isolation

Research has identified three main types of subjective isolation: emotional loneliness, social loneliness, and existential isolation. Loneliness broadly refers to the unpleasant experience when a person feels their social relationships are lacking in some important way (Cacioppo et al., 2009; Perlman & Peplau, 1981). There are two kinds of subjective isolation that can stem from loneliness: the perceived absence of intimate relationships or close emotional attachment figures such as a partner or best friend gives rise to *emotional loneliness* (De Jong Gierveld & Van Tilburg, 2006; Weiss, 1973); in contrast, *social loneliness* stems from the perceived absence of a broader engaging social network (Weiss, 1973; De Jong Gierveld & Van Tilburg, 2006). Thus, a person could have a meaningful

and fulfilling intimate relationship (i.e., low in emotional loneliness) but not have an engaging social group of friends (i.e., high in social loneliness). Conversely, someone could have a tight group of friends, but not have a meaningful romantic relationship.

Recent research has also focused on feelings of *existential isolation* (EI; Helm, Greenberg et al., 2019; Yalom, 1980). EI refers to the existential reality that humans can never truly know the subjective experiences of others. Although EI is characteristic of all humans, people vary in the degree to which they are aware of this separation from others, that others share their perspectives, and have the same outlook they do (Pinel et al., 2017). In this sense, EI is a subjective form of interpersonal isolation that reflects the degree to which people feel that others are able to understand their subjective experiences.

Existential isolation differs from loneliness in a number of ways. Whereas loneliness typically refers to the perceived presence or absence of satisfying social relationships, EI refers to feelings that others are able to understand their perspective. Multiple studies have found EI and loneliness to be moderately, but not highly, correlated and support the divergent validity between EI and loneliness (Helm et al., 2018, 2020; Helm, Lifshin et al., 2019; Pinel et al., 2017). For example, Pinel and colleagues (2017) found EI to be uncorrelated with the need to belong while loneliness positively correlated with this need. Helm and colleagues (2020) found that while both EI and loneliness were positively correlated with insecure attachment, EI was more correlated with avoidant than anxious attachment, while loneliness was more correlated with anxious than avoidant attachment.

These distinctions in the type of isolation may be important. The view that social media should decrease loneliness and thus enhance meaning does not consider that different influences may unfold depending on the type of isolation that people experience. Moreover, it remains an open question of how such social media use might moderate the effects of isolation on meaning during the widespread admonitions to stay-at-home during the coronavirus pandemic.

Present research: Social media use, isolation, and meaning in the context of a pandemic

Perhaps especially during the early phases of the unprecedented coronavirus pandemic in which millions of people practiced social distancing behaviors or self-quarantining, social media use was a primary way of connecting with the outside world, be it friends, family, or staying up-to-date with the news. As noted, during the pandemic, social media use increased and was inundated with content related to the coronavirus, public health, and staying home (Gebel, 2020; Handley, 2020). At the same time, although people's everyday experiences varied, the vast majority contended with the same core challenge of trying to navigate an uncertain risk of viral transmission under widespread stay-at-home or shelter-in-place recommendations (if not directives). Taken together, this context of distancing from others, and yet having the opportunity to either passively observe or actively take part in the sharing of that experience through social media, suggests that social media use may have different effects on different aspects of subjective isolation (emotional vs. social vs. existential), with different consequences for MIL.

Social media offers a means through which people can connect with one another, share their experiences, and affirm that others are in the same situation (Rae & Lonborg, 2015), thereby normalizing the stress of the global crisis. This reasoning suggests a path in which social media use should reduce one's EI, thus leading to higher MIL. Yet, overexposure to pandemic related news on social media is associated with decreased mental health (Gao et al., 2020), which may reflect a sense of aloneness and despair, feeling as though others cannot understand one's personal experiences (i.e., increasing EI), predicting lower MIL.

While social media facilitates connecting with others, the connection is mediated; this indirect interaction, during a time in which one does not have the ability to connect in-person, could make missing close others especially salient (e.g., De Jong Gierveld & Van Tilburg, 2006; Verduyn et al., 2015). In this case, social media use would potentially increase emotional loneliness, which should predict lower MIL. Conversely, social media use has been found to increase social support with strong ties (e.g., Burke & Kraut, 2016; Domahidi, 2018; Pennington, 2021), thus possibly reducing emotional loneliness thereby predicting higher MIL.

Lastly, social media use has been found to increase well-being when used for maintaining existing relationships (Rae & Lonborg, 2015), even when those existing relationships are inaccessible (Thomas et al., 2020); thus, it may be associated with lower social loneliness, which should predict higher MIL. However, browsing social media has been found to increase envy and social comparisons (Krasnova et al., 2015; Verduyn et al., 2015), which may lead to greater social loneliness and thus lower MIL.

Taken together, previous research suggests a variety of opposing predictions concerning relationships between social media use, forms of subjective isolation, and meaning in life. The current studies were conducted during the early stages of the pandemic in the United States as an exploratory test of these relationships. Specifically, we examine the following general research questions:

RQ1. How will social media use predict the different forms of subjective isolation (EI, emotional loneliness, social loneliness)?

RQ2. Will social media use differentially indirectly predict MIL through different forms of subjective isolation?

RQ3. How might these effects differ between active and passive social media use?

Study 1 serves as an initial exploratory study where we examine *RQ1* and *RQ2*. Study 2 was conducted to replicate the patterns of Study 1 and to differentiate between active and passive social media use, informing *RQ3*. These studies are thus the first to examine how social media use relates to EI, and how social media use may differentially relate to different types of subjective isolation. Additionally, these studies are the first to examine how social media use may indirectly predict MIL through forms of interpersonal isolation in the context of the pandemic.

Study I

The foregoing conceptual analysis suggests that social media usage may have divergent relationships with forms of interpersonal isolation and MIL. Study I was an initial exploratory test of the relationships. The research was approved by an Institutional Review Board at the University of Missouri.

Methods

Procedure

Data were collected online on March 26th, 2020. Participants were recruited on Amazon's Mechanical Turk (mturk) via CloudResearch (Litman et al., 2017) and were asked to participate in a survey on various social outcomes.¹ After providing consent, participants completed a series of questionnaires, were presented with a debriefing form, and were compensated \$0.75 for their time. Compensation was based on available funds.

Participants

A total of 318 participants completed the survey online. Of these, we excluded participants who failed an attention check ($n = 19$) leaving a final sample of 299 participants² (age range = 19–87, median = 35, $M_{age} = 38.75$, $SD = 14.07$), including 149 who identified as male and 148 who identified as female (2 did not provide a gender). Additionally, 232 participants identified as White, 36 as Black, four as Native American, 23 as Asian, and eight as “Other” (these categories were not mutually exclusive).

Sixty-one (20.4%) participants indicated that they were not or were only somewhat staying home, and 235 (78.6%) indicated they were staying home. A total of 266 participants reported being employed, 15 reported being retired, and 16 reported being unemployed (two did not report this information). Fourteen participants reported being a high school graduate (diploma or equivalent), 64 reported having some college but no degree, 34 reported having an Associate degree (2-year college), 130 reported having a bachelor's degree (4-year college), 47 reported having a master's degree, five reported having a doctoral degree, three reported having a professional degree (J.D. or M.D.), and two did not report this information. Additionally, 164 participants (54.8%) reported residing in states with active stay-at-home orders, and 131 (43.8%) resided in states without those orders (four participants did not indicate state of residence).

Materials

Participants completed the survey in the following order:

State Existential Isolation Scale: As in previous research (Helm, Lifshin et al., 2019), a modified version of the existential isolation scale (Pinel et al., 2017) presented the instructions and items phrased to reflect in-the-moment feelings rather than general ones (e.g., “I usually feel like people share my outlook on life” was changed to “I feel like

people share my outlook on life”). The scale consists of six statements in which participants indicate their agreement or disagreement with each from 1–strongly disagree to 7–strongly agree ($\alpha = .87$, skew = .44, kurtosis = .15). Higher scores indicate greater state EI.

Social and emotional loneliness: Social and emotional loneliness was assessed via the 6-item De Jong Gierveld Loneliness Scale (De Jong Gierveld & Van Tilburg, 2006). This scale consists of two 3-item subscales measuring social (e.g., “There are many people I can trust completely”) and emotional loneliness (e.g., “I miss having people around me”). Participants indicate whether they do, do not, or more or less experience each statement. Scores were coded and averaged for each subscale such that scores ranged from 0 to 1 for each type of loneliness (emotional loneliness $\alpha = .59$; social loneliness $\alpha = .72$, skew = .20, kurtosis = -1.55). Due to the low reliability of the emotional loneliness scale, we dropped one item to improve reliability ($\alpha = .62$, skew = .56, kurtosis = -1.22).³ Higher scores indicate greater social or emotional loneliness.

Meaning in life: MIL was assessed using the 5-item presence of meaning subscale of the Meaning in Life Questionnaire (Steger et al., 2006). Participants indicate whether each item is true for them from 1 = absolutely untrue, to 7 = absolutely true. Example items include, “I understand my life’s meaning” and “My life has a clear sense of purpose” ($\alpha = .91$, skew = $-.69$, kurtosis = .93). Scores were coded such that higher scores indicate greater presence of meaning.

Social media use: Social media use was measured in general terms using a single item (skew = .67, kurtosis = $-.63$), “How frequently do you currently use social media?” Participants responded from 1 (never) to 7 (very frequently). We purposely left the term “social media” broad in hopes of assessing a broad array of platforms (e.g., Facebook, Twitter, and Instagram). Face valid single-items have been used in prior research to assess frequency of social media use (e.g., Brailovskaia & Teichert, 2020).

Demographics: Lastly, participants answered questions about age, sex, race, and state of residence. This section also included an item assessing whether participants were currently staying home or not, “Are you currently staying home to avoid spreading coronavirus?” Participants responded with yes, no, or somewhat.

Analytical plan

Utilizing SPSS version 26, we examined initial zero-order correlations between variables before conducting a multiple mediation model utilizing SPSS plugin *PROCESS* (Hayes, 2012) model 4. This model assesses the indirect effects of multiple mediators operating in parallel (i.e., not affecting each other). We also included the following covariates: gender, age, whether they were in a state with active stay-at-home orders, and whether participants were actually staying home.

Results

Descriptive statistics and zero-order correlations for measures of interest are presented in Table 1. At the zero-order level, general social media use was only significantly correlated

Table 1. Zero-order correlations between variables in Study 1.

	State EI	Emotional loneliness	Social loneliness	MIL	Descriptive
1 SM use	-.205***	.104†	-.113†	.022	5.01 (1.82)
2 State EI	1	.105†	.249***	-.330***	3.46 (1.16)
3 Emotional loneliness		1	.273***	-.393***	.35 (.40)
4 Social loneliness			1	-.414***	.45 (.41)
5 MIL				1	4.99 (1.46)

Notes. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. EI = existential isolation; MIL = meaning in life. Means are presented in the descriptive column with standard deviations in parentheses.

with lower state EI. The multiple mediation analysis revealed greater general social media use predicted lower state EI and social loneliness, which subsequently predicted greater MIL. General social media use did not predict emotional loneliness at the zero-order level or in the multiple mediation analysis (see [Table 2](#) for a summary of contrasting mediation paths and [Figure 1](#) for a graphical depiction).

Discussion

Addressing *RQ1* and *RQ2*, Study 1 reveals that social media use during the pandemic was associated with lower state EI and social loneliness, which indirectly predicted greater MIL. Interestingly, social media use did not significantly predict emotional loneliness, though the relationship was trending in the opposite direction than state EI and social loneliness.

These results should be interpreted with caution. Self-report frequency of internet use items can be inaccurate ([Scharkow, 2016](#)) and potentially problematic when predicting well-being related variables ([Orben, 2020](#)). In the present context, we were interested in how social media use indirectly predicts MIL via subjective isolation rather than the direct relationship. Nevertheless, the accuracy of self-report usage measures may limit generalizability.

Of course, Study 1 was an initial exploratory test of these multifaceted relationships between social media use, types of subjective isolation, and MIL. Replication is important to increase confidence in potential insights, which was the primary purpose of Study 2. Moreover, we sought to test whether different ways in which people use social media would differentially predict facets of isolation. Research has highlighted that social media's effect on well-being can depend on how it is used. In particular, we were interested in comparing the effect of actively and passively using social media ([Burke et al., 2010](#); [Frison & Eggermont, 2016](#)) on MIL via forms of subjective isolation (*RQ3*).

As discussed above, active social media use refers to users engaging on social media platforms in a manner that leads to direct exchanges with others, while passive social media use refers to using social media platforms in a manner that does not lead to direct

Table 2. Path coefficients, indirect effects, and 95% confidence intervals predicting meaning in life from social media use via multiple mediators in Study 1.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)	.08	-.10	.17	.05	1.63	.105
Direct effect (c')	.03	-.05	.11	.04	.61	.542
a_1	-.12	-.20	-.04	.04	3.11	.002
a_2	.01	-.01	.04	.01	.91	.366
a_3	-.03	-.06	-.00	.01	2.15	.032
b_1	-.31	-.43	-.19	.06	4.89	<.001
b_2	-.94	-1.31	-.57	.19	5.02	<.001
b_3	-.86	-1.23	-.50	.19	4.64	<.001
Indirect effects						
Total indirect effect	.05	-.01	.11	.03		
a_1b_1	.04	.01	.07	.02		
a_2b_2	-.01	-.04	.01	.01		
a_3b_3	.03	.00	.05	.01		
Contrasts						
C1	.05	.02	.09	.02		
C2	.01	-.03	.05	.02		
C3	-.04	-.07	-.01	.02		

Notes. a_1 , a_2 , a_3 = regression coefficients of social media use predicting state existential isolation, emotional loneliness, and social loneliness, respectively. b_1 , b_2 , b_3 = regression coefficients of state existential isolation, emotional loneliness, and social loneliness predicting meaning in life, respectively. C1 = state existential isolation minus emotional loneliness ($a_1b_1 - a_2b_2$); C2 = state existential isolation minus social loneliness ($a_1b_1 - a_3b_3$); C3 = emotional loneliness minus social loneliness ($a_2b_2 - a_3b_3$).

Boot LLCI = bootstrapping lower limit confidence interval; Boot ULCI = bootstrapping upper limit confidence interval; SE = standard error; C# = contrast.

exchanges or communication with others (Burke et al., 2010). Generally, active use has been found to be positively related to well-being while passive use has been found to be negatively related to well-being (Burke et al., 2010; Fardouly et al., 2015; Kim et al., 2013; Krasnova et al., 2015; Pennington, 2021; Shaw et al., 2015; Verduyn et al., 2017; Wenninger et al., 2014), though some meta-analyses find no relationship between passive use and social support (e.g., Liu et al., 2018).

Given the exploratory nature of these studies, Study 2 assesses whether the relationships observed in Study 1 with general social media use would replicate when active was differentiated from passive use.

Study 2

Study 2 served as an opportunity to replicate and extend Study 1, address RQ3, and was conducted over a longer period of time.

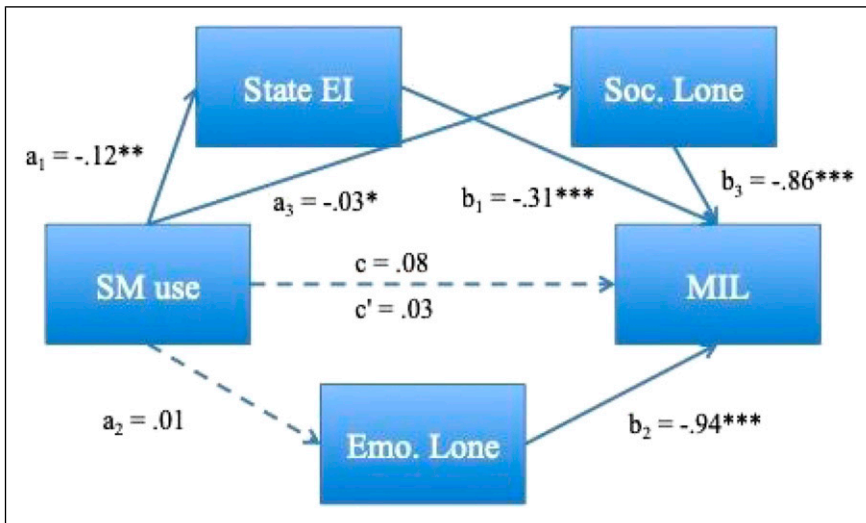


Figure 1. Graphical depiction of social media use predicting meaning in life via forms of subjective isolation. Note: EI = existential isolation; Soc. Lone = social loneliness; Emo. Lone = emotional loneliness; MIL = meaning in life. $** p < .01$; $*** p < .001$.

Methods

Procedure

Data for Study 2 were collected between April 2nd, 2020, and April 24th, 2020. The procedure for Study 2 was identical to Study 1. We set exclusion criteria to prohibit anyone who participated in Study 1 or in prior data collection from taking part.

Participants

A total of 1309 participants completed the survey online. Of these, we excluded participants who failed an attention check ($n = 162$) leaving a final sample of 1147 participants⁴ (age range = 18–82, median = 34, $M_{age} = 37.47$, $SD = 12.64$), including 654 who identified as male and 478 who identified as female (four identified as “other” and 11 did not indicate their sex). Additionally, 798 participants identified as White, 208 as Black, 27 as Native American, 94 as Asian, 12 as Native Hawaiian or Pacific Islander, and 25 as “Other” (these categories were not mutually exclusive).

Two-hundred and twenty-eight (19.4%) participants indicated that they were not or were only somewhat staying home, and 900 (78.5%) indicated they were staying home; 18 (1.6%) did not answer this question. A total of 1015 participants reported being employed, 34 reported being retired, and 86 reported being unemployed (12 did not report this information). Three participants reported having less than a high school degree, 66 reported being a high school graduate (diploma or equivalent), 156 reported having some

Table 3. Zero-order correlations between variables in Study 2.

	Active SM	Passive SM	State EI	Emo. Lone	Social Lone	Descriptive	α	Skew; kurtosis
Active SM	1					4.59 (1.83)	—	-.47, -.83
Passive SM	.476***	1				5.00 (1.64)	—	-.70, -.15
State EI	-.179***	-.115***	1			3.46 (.98)	.76	.60, .93
Emo. Lone	.238***	.194***	.150***	1		.46 (.41)	.61	.13, -1.53
Social Lone	-.106***	-.057†	.290***	.203***	1	.45 (.39)	.71	.18, -1.47
MIL	.083**	.011	-.321***	-.334***	-.357***	5.00 (1.27)	.83	-.83, .85

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. EI = existential isolation; MIL = meaning in life; SM = social media use; Emo. Lone = emotional loneliness⁵; Social Lone = social loneliness. Means are presented in the descriptive column with standard deviations in parentheses.

college but no degree, 103 reported having an Associate degree (2-year college), 546 reported having a bachelor's degree (4-year college), 224 reported having a master's degree, 15 reported having a doctoral degree, 20 reported having a professional degree (J.D. or M.D.), and 14 did not report this information. Additionally, 1048 (91.4%) participants reported residing in states with active stay-at-home orders, and 82 (7.2%) resided in states without those orders (16 participants (1.4%) did not indicate state of residence).

Materials

The materials in Study 2 were identical to those used in Study 1, with the exception of social media use item, which was replaced with two items measuring active and passive social media use. Scale reliabilities are presented in Table 3.

Active and passive social media use: Participants responded to two items, one assessing active social media use: "How frequently have you been actively using social media in the current situation? (e.g., actively liking and sharing posts, commenting on posts, posting status updates, etc.);" and one assessing passive social media use: "How frequently have you been passively using social media in the current situation? (e.g., browsing through your newsfeed without commenting or liking, viewing photos, etc.)." Participants responded from 1 (never) to 7 (very frequently). These items were adapted from Frison and Eggermont (2016).

Analytical plan

We opted for the same analytical plan adopted in Study 1: assessing initial zero-order correlations between variables and conducting a multiple mediation model assessing the

indirect effects of each mediator in parallel. This model was conducted separately for active and passive social media use. We also included the following covariates: gender, age, whether they were in a state with active stay-at-home orders (1 = yes, 0 = no), whether participants were actually staying home (0 = no or somewhat, 1 = yes), and survey week. Additionally, models focusing on active social media use controlled for passive use, and vice versa.

Results

Descriptive statistics and zero-order correlations between variables of interest are presented in [Table 3](#). At the zero-order level, active social media use was positively correlated with emotional loneliness and negatively correlated with state EI and social loneliness. Passive social media use was also positively correlated with emotional loneliness and negatively correlated with state EI but was not significantly correlated with social loneliness.

Multiple mediation analysis specifying active social media use as the predictor revealed a positive indirect effect on MIL via lower state EI and social loneliness, and a negative indirect effect on MIL via higher emotional loneliness. Multiple mediation analyses specifying passive social media use as the predictor revealed a significant negative indirect effect on MIL via higher emotional loneliness. Pathways from passive social media use to MIL via state EI and social loneliness were nonsignificant. The multiple mediation models are summarized in [Tables 4](#) and [5](#) (see [Figures 2](#) and [3](#) for graphical depictions).

Discussion

Study 2 replicated the findings from Study 1 in that social media use indirectly predicted MIL via different forms of subjective isolation. Moreover, Study 2 extended findings from Study 1 by breaking down general social media use into active and passive social media use.

The zero-order correlations reveal both passive and active social media use to be positively correlated with emotional loneliness and negatively correlated with state EI. Only active use was significantly negatively correlated with social loneliness.

Informing *RQ3*, and replicating Study 1 patterns, active social media use was differentially related to state EI, emotional loneliness, and social loneliness. Active social media use predicted lower state EI and social loneliness, but greater emotional loneliness, which predicted greater and reduced MIL, respectively. In contrast, passive social media use only significantly predicted MIL via higher emotional loneliness. Consistent with prior research on well-being (e.g., [Kim et al., 2013](#); [Verduyn et al., 2017](#)), active social media use directly predicted greater MIL

General Discussion

During a time when people were dealing with unprecedented challenges, how did their increasing reliance on social media impact their sense that life remained meaningful? The

Table 4. Path coefficients, indirect effects, and 95% confidence intervals predicting meaning in life from active social media use via multiple mediators in Study 2.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)	.08	.03	.12	.02	3.21	.001
Direct effect (c')	.07	.03	.11	.02	3.06	.002
a_1	-.09	-.12	-.05	.02	4.69	<.001
a_2	.03	.02	.05	.01	4.55	<.001
a_3	-.02	-.04	-.01	.01	2.81	.005
b_1	-.25	-.32	-.18	.04	6.81	<.001
b_2	-.82	-1.00	-.65	.09	9.14	<.001
b_3	-.76	-.94	-.59	.09	8.41	<.001
Indirect effects						
Total indirect effect	.01	-.02	.04	.01		
a_1b_1	.02	.01	.04	.01		
a_2b_2	-.03	-.04	-.02	.01		
a_3b_3	.02	.00	.03	.01		
Contrasts						
C1	.05	.03	.07	.01		
C2	.01	-.01	.02	.01		
C3	-.04	-.06	-.03	.01		

Notes. a_1 , a_2 , a_3 = regression coefficients of social media use predicting state existential isolation, emotional loneliness, and social loneliness, respectively. b_1 , b_2 , b_3 = regression coefficients of state existential isolation, emotional loneliness, and social loneliness predicting meaning in life, respectively. C1 = state existential isolation minus emotional loneliness ($a_1b_1 - a_2b_2$); C2 = state existential isolation minus social loneliness ($a_1b_1 - a_3b_3$); C3 = emotional loneliness minus social loneliness ($a_2b_2 - a_3b_3$).

Boot LLCI = bootstrapping lower limit confidence interval; Boot ULCI = bootstrapping upper limit confidence interval; SE = standard error; C# = contrast.

present studies help to answer such questions by elucidating relationships between social media use, subjective isolation, and MIL during a pandemic in the United States. Study 1 found that general social media use indirectly predicted greater MIL via lower state EI and social loneliness. The relationship between general social media use and emotional loneliness was non-significant, though trending in the opposite direction than state EI and social loneliness.

Study 2 differentiated between types of social media use and revealed that active social media use was positively correlated with MIL. Moreover, active social media use predicted lower state EI and social loneliness, but greater emotional loneliness, thus indirectly positively and negatively predicting MIL, respectively. Conversely, passive social media use was not directly related to MIL, and only indirectly related to meaning via higher emotional loneliness.

Stated differently, actively engaging on social media (e.g., liking, sharing, commenting, and updating) was associated with increased awareness of the absence of intimate or emotional attachment figures (i.e., higher emotional loneliness). Yet active use was also associated with a lower sense that one was alone in one's experiences and a lower

Table 5. Path coefficients, indirect effects, and 95% confidence intervals predicting meaning in life from passive social media use via multiple mediators in Study 2.

Path	Effect	Boot LLCI	Boot ULCI	SE	t	p-value
Total effect (c)	-.00	-.06	.05	.03	.16	.871
Direct effect (c')	.00	-.05	.05	.02	.01	.994
a ₁	-.02	-.06	.02	.02	1.10	.271
a ₂	.02	.00	.03	.01	2.17	.030
a ₃	-.01	-.02	.01	.01	.72	.474
b ₁	-.25	-.32	-.18	.04	6.81	<.001
b ₂	-.82	-1.00	-.64	.09	9.14	<.001
b ₃	-.76	-.94	-.59	.09	8.41	<.001
Indirect effects						
Total indirect effect	-.01	-.03	.03	.02		
a ₁ b ₁	.01	-.01	.02	.01		
a ₂ b ₂	-.02	-.03	-.00	.01		
a ₃ b ₃	.01	-.01	.02	.01		
Contrasts						
C1	.02	.00	.04	.01		
C2	.00	-.01	.02	.01		
C3	-.02	-.04	-.00	.01		

Notes. a₁, a₂, a₃ = regression coefficients of social media use predicting state existential isolation, emotional loneliness, and social loneliness, respectively. b₁, b₂, b₃ = regression coefficients of state existential isolation, emotional loneliness, and social loneliness predicting meaning in life, respectively. C1 = state existential isolation minus emotional loneliness ($a_1b_1 - a_2b_2$); C2 = state existential isolation minus social loneliness ($a_1b_1 - a_3b_3$); C3 = emotional loneliness minus social loneliness ($a_2b_2 - a_3b_3$).

Boot LLCI = bootstrapping lower limit confidence interval; Boot ULCI = bootstrapping upper limit confidence interval; SE = standard error; C# = contrast.

sense that one is missing their broader social network (i.e., lower EI and social loneliness). Thus, active engagement with social media was associated more with missing close attachment figures, with feeling validated in one's experiences, and with being part of an engaging social network. Passive use in contrast, was only associated with missing close attachment figures but not with feeling validated or with feeling part of a social network. Thus it appears that the positive relationships between social media use and subjective interpersonal isolation only occur when people are actively engaging with social media.

Study implications

These findings extend the broader literature on social media use and well-being by clarifying the differential relationships between social media use and interpersonal isolation. Previous work has identified the general negative relationship between social media use and loneliness (Hall, 2018; Lou et al., 2012; Pennington, 2021; Pittman & Reich, 2016; Thomas et al., 2020), yet the present work suggests, at least during a pandemic, that active social media use is associated with lower social loneliness and state

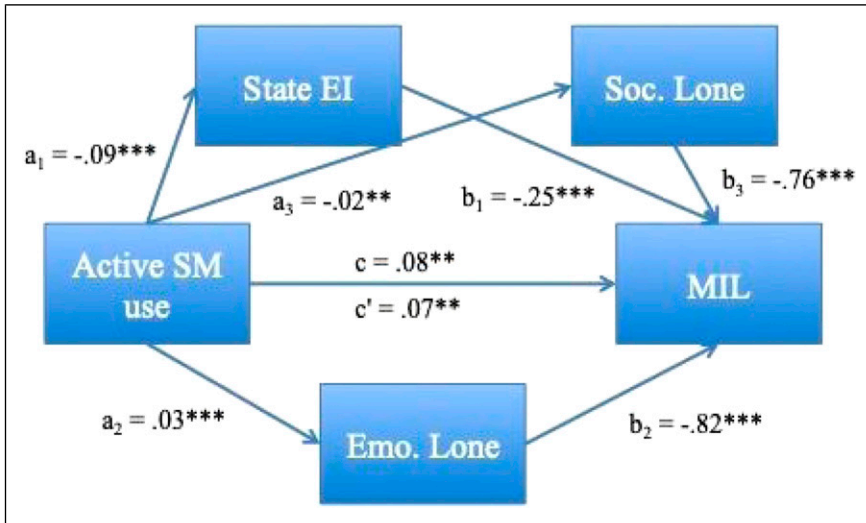


Figure 2. Graphical depiction of active social media use predicting meaning in life via forms of subjective isolation. Note. EI = existential isolation; Soc. Lone = social loneliness; Emo. Lone = emotional loneliness; MIL = meaning in life. * $p < .05$; ** $p < .01$; *** $p < .001$.

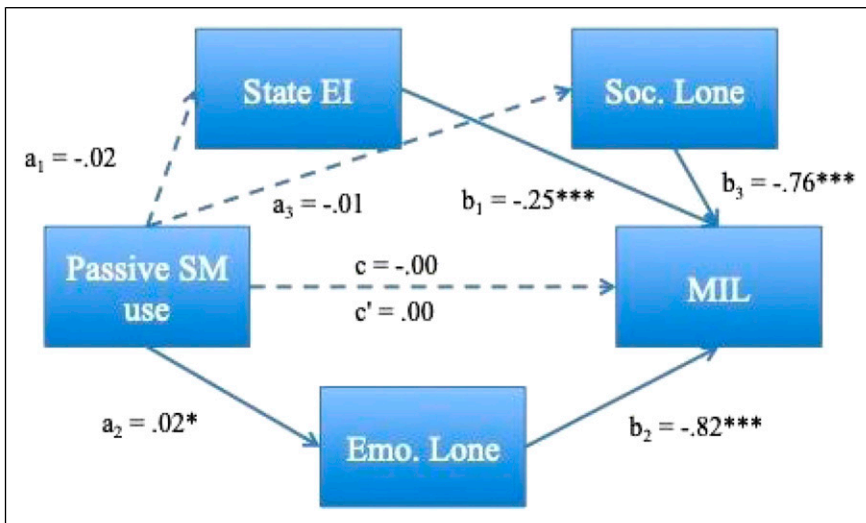


Figure 3. Graphical depiction of passive social media use predicting meaning in life via forms of subjective isolation. Note. EI = existential isolation; Soc. Lone = social loneliness; Emo. Lone = emotional loneliness; MIL = meaning in life. * $p < .05$; ** $p < .01$; *** $p < .001$.

EI, but higher emotional loneliness. This nuance underscores the importance of measuring the type of interpersonal isolation rather than treating it as a singular construct.

Prior work suggested multiple diverging relationships between types of social media use and MIL. The present studies help clarify these relationships. [Rae and Lonborg \(2015\)](#) suggested social media offers opportunities for connection, sharing information, and affirming one's experiences. Consistent with this proposition, active social media usage was associated with lower state EI and subsequently higher MIL.

Literature also suggested that social media use may increase the salience of missing others and thus increase emotional loneliness ([De Jong Gierveld & Van Tilburg, 2006](#); [Verduyn et al., 2015](#)), while other work suggested usage may increase perceived social support ([Burke & Kraut, 2016](#)), thus possibly reducing emotional loneliness. The present work provides support for the former. Furthermore, the negative relationship between social media use and social loneliness, particularly regarding active use, supports prior work that social media use increases well-being when used to maintain relationships ([Rae & Lonborg, 2015](#); [Thomas et al., 2020](#)).

Taken together, the present research contributes to the broader literature by finding the relationships between social media use and well-being (as measured by MIL; [Steger, 2017](#)) appear similar to those observed in non-pandemic times. This is important because recent work has highlighted that the overall relationship between social media use and well-being tends to be negative, but weak ([Orben, 2020](#)). By identifying the divergent pathways between social media and MIL via different forms of isolation, this work clarifies that the nature of these relationships differ depending on the type of interpersonal isolation examined, and the type of social media use, which underscores the importance of taking these differences into account.

Beyond contributions to social media literature, the present research is also the first to examine the relationships between EI and MIL, emotional loneliness, and social loneliness. Not only does this offer an opportunity to understand the multifaceted aspects (and influences) of isolation, it helps to inform a burgeoning understanding of the novel construct of EI. State EI was negatively associated with MIL, suggesting that the more one feels as though others do not share in their subjective experiences, the less meaning they tend to report. While there have been theoretical reasons to expect EI to negatively relate to MIL, no research had examined this link empirically.

Additionally, previous research (e.g., [Helm et al., 2020](#); [Pinel et al., 2017](#)) found EI to be moderately and positively correlated with general loneliness, but no research had examined how EI relates to different types of loneliness. In the present research, EI was weakly correlated with emotional loneliness and weakly-to-moderately correlated with social loneliness. In other words, the extent to which one feels alone in their experience (existentially isolated) appears to be only weakly related to the extent to which one feels as though they lack an intimate close relational figure (emotional loneliness). Conversely, feeling more existentially isolated is correlated with feeling as though one lacks a broader group of contacts or an engaging social network (social loneliness). This distinction helps to clarify the way in which these constructs overlap.

These distinctions, in turn, can also be leveraged to explore ways to help people better cope with confinements. To be sure, people across the world were facing unprecedented

challenges of in-person interaction. As additional waves of the pandemic are confronted, it may be useful to examine specific strategies by which social media can be used to validate one's subjective experience (i.e., reduce EI) while also reducing the extent to which virtual interaction makes salient how much intimate others are missed (i.e., increasing emotional loneliness). For example, encouragement to disclose struggles may be more useful for maintaining well-being than dwelling on get-togethers lost. Future work is needed to articulate how the present findings can be used to advance more concrete communication recommendations.

Limitations and conclusions

While these models provide consistent evidence regarding the relationships between social media use, types of isolation, and MIL, they are not without limitations. Both studies were cross-sectional, and thus, causal pathways cannot be assessed and may be subject to bias (e.g., [Maxwell & Cole, 2007](#)). We articulated these models with the idea that social media use leads to differing types of isolation, which then subsequently affects MIL. While this conceptualization is consistent with prior literature (e.g., [Verduyn et al., 2017](#)), it is possible other relationships exist. Along these lines, mediation analysis was designed to test for intervening variables in causal relationships (e.g., [Baron & Kenny, 1986](#); [Judd & Kenny, 1981](#)). The cross-sectional nature of our design cannot establish temporal precedence; thus, the conclusions drawn from these models is limited ([Wiedermann & von Eye, 2015](#)). Yet, cross-sectional mediation tests can be useful as an initial exploration of a theoretical relationship, especially when the hypothesized direction is supported by theory and previous research ([Pieters, 2017](#)), as was the case in the present studies. That being said, it will be important for future work to utilize both longitudinal and experimental designs and to assess these relationships outside the pandemic to determine whether these theoretical relationships hold in other contexts.

Our studies are also limited in that they only examine these processes within a single national context: the United States, and at discrete time points in what has been an evolving health crisis. In terms of the global landscape, the United States has been an outlier in its response to the pandemic ([Mellish et al., 2020](#); [Wike et al., 2020](#)) with its citizens adhering less to public health official suggestions than have citizens of other industrialized nations ([Yong, 2020](#)). Future research should assess these relationships in other cultural contexts as well, and perhaps especially in more collectivistic countries where there may be more widespread volitional endorsement of social distancing measures. Further, within the U.S. context, one's ability to stay at home during the initial stages of the pandemic was closely tied to their socioeconomic status ([Sy et al., 2021](#)). By not including data related to socioeconomic status and other potentially relevant demographic factors, it remains possible that other third variables could account for the relationships observed in the present studies. A more focused analysis of the ways social media use predicts MIL through forms of interpersonal isolation while accounting for socioeconomic status and other related demographic variables is necessary to better inform these questions.

Another limitation is that the present studies relied on single-item measures of social media use in both Studies 1 and 2. While these measures were face-valid and are often used in the literature (e.g., [Brailovskaia & Teichert, 2020](#)), single-item measures can be problematic due to low reliability, limited sensitivity, and limited content validity (e.g., [Nunnally, 1978](#)). Similarly, the studies relied on self-report data on social media use which is also susceptible to recall bias and comprehension of survey items ([Orben, 2020](#)). Future research could benefit from utilizing more objective measures of social media use. Additionally, previous research has identified that “active” social media use can encompass a wide variety of behaviors (e.g., from liking a post to sending direct messages) with divergent consequences ([Gerson et al., 2017](#)). The present studies did not differentiate between types of active use and thus cannot comment on which behaviors are most predictive of isolation and MIL.

The reliability of emotional loneliness was also suboptimal in both studies. Previous research has demonstrated excellent reliability of this scale in a multitude of contexts across age-groups and nationality (e.g., [De Jong Gierveld & Van Tillburg, 2010](#)). It is possible that the pandemic affected the reliability of these items (e.g., stay-at-home orders may lead people to miss others but not affect their general sense of emptiness or rejection). Eliminating an item from this scale increased reliability to an acceptable threshold, but nevertheless, the low reliabilities in the present study constitutes a limitation.

The present studies were conducted during a narrow window of time during the early months of the pandemic in the United States. Yet given the consistency of the present findings with prior research ([Rae & Lonborg, 2015](#); [Thomas et al., 2020](#)), there is reason to suspect these relationships may generalize beyond those months (e.g., [Pennington, 2021](#)), especially given the pandemic is ongoing and is likely to continue to ebb and flow.

Lastly, the present studies did not thoroughly assess gender identity, sexual orientation, ethnicity, or disability status. Given the variety and prevalence of online social support groups available for those with varying identities ([Fox, 2009](#)), these results may be further moderated by identity and participation in such groups (e.g., utilizing social media to connect with others with shared identities may differ from connecting with others more broadly). Exploring how these identities may affect connectedness is an important area for future research.

Despite these limitations, this work provides important insights into the dynamics of the likely mediums through which people were trying to cope with the challenges of the pandemic. People were facing considerable mental health challenges during the coronavirus pandemic (e.g., [Pfefferbaum & North, 2020](#); [Rajkumar, 2020](#)) and research has found that MIL is an important mediator of the relationship between suffering and well-being (e.g., [Edwards & Van Tongeren, 2019](#)). As social media use surged during pandemic times, this research helps identify the divergent relationships between social media and MIL via different forms of subjective isolation.

More social media use was associated with more emotional loneliness but less state EI and social loneliness. Accounting for these relationships, in turn, enabled insights that social media use indirectly predicts lower and greater MIL, respectively. Moreover, these relationships appear to be stronger when assessing active usage than when assessing passive usage. Future efforts to understand why and how social media can be used as a

means to increase well-being may want to focus on ways in which social media can decrease one's sense that they are alone in their experience and/or to focus on ways to reduce the negative impact social media use has on emotional loneliness.

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Supplemental material

Supplemental material for this article is available online.

Notes

1. The present study only focuses on a subset of the available measures (see <https://osf.io/anbe6/> for data and full list of measures).
2. 3.3% of the sample reported missing data on at least 1 item. Data was found to be missing completely at random and were listwise excluded in any given test.
3. Results are similar if all three items are used, or other combinations of 2 items. See [supplemental materials](#) for full analyses.
4. 5.1% of the sample reported missing data on at least 1 item. Data was found to be missing completely at random and were listwise excluded in any given test.
5. One item was again dropped from the emotional loneliness scale to improve reliability.

References

- Allington, D., Duffy, B., Wessely, S., Dhavan, N., & Rubin, J. (2020). Health-protective behavior, social media usage and conspiracy belief during the COVID-19 public health emergency. *Psychological Medicine*, 51(10), 1763–1769. <https://doi.org/10.1017/s003329172000224x>.

- Arndt, J., Landau, M. J., Vail, K. E., III, & Vess, M. (2013). An edifice for enduring personal value: A terror management perspective on the human quest for multi-level meaning. In K. Markman, T. Proulx, & M. Lindberg (Eds.), *The psychology of meaning* (pp. 49–69). APA. <https://doi.org/10.1037/14040-003>.
- Banerjee, D., & Rai, M. (2020). Social isolation in Covid-19: The impact of loneliness. *International Journal of Social Psychiatry*, *66*(6), 525–527. <https://doi.org/10.1177/0020764020922269>.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. <https://doi.org/10.1037//0022-3514.51.6.1173>.
- Berg-Weger, M., & Morley, J. E. (2020). Loneliness and social isolation in older adults during the Covid-19 pandemic: Implications for gerontological social work. *Journal of Nutrition, Health and Aging*, *24*(5), 456–458. <https://doi.org/10.1007/s12603-020-1366-8>.
- 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.
- Berger, P. L., & Luckmann, T. (1966). *The social construction of reality: A treatise in the sociology of knowledge*. Anchor Books.
- Brailovskaia, J., & Teichert, T. (2020). “I like it” and “I need it”: Relationship between implicit associations, flow, and addictive social media use. *Computers in Human Behavior*, *113*, 106509. <https://doi.org/10.1016/j.chb.2020.106509>.
- Burke, M., & Kraut, R. E. (2016). The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of Computer-Mediated Communication*, *21*(4), 265–281. <https://doi.org/10.1111/jcc4.12162>.
- Burke, M., Marlow, C., & Lento, T. (2010). Social network activity and social well-being. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Atlanta, GA, 10–15 April 2010. pp. 1909–1912. <https://doi.org/10.1145/1753326.1753613>.
- Cacioppo, J. T., Fowler, J. H., & Cristakis, N. A. (2009). Alone in the crowd: The structure and spread of loneliness in a large social network. *Journal of Personality and Social Psychology*, *97*(6), 977–991. <https://doi.org/10.1037/a0016076>.
- Carr, C. T., & Hayes, R. A. (2015). Social media: Defining, developing, and divining. *Atlantic Journal of Communication*, *23*(1), 46–65. <https://doi.org/10.1080/15456870.2015.972282>.
- Cinelli, M., Quattrocioni, W., Galeazzi, A., Valensise, C. M., Brugnoti, E., Schmidt, A. L., Zola, P., Zollo, F., & Scala, A. (2020). The covid-19 social media infodemic. *Scientific Reports*, *10*(1), 16598. <https://doi.org/10.1038/s41598-020-73510-5>.
- De Jong Gierveld, J., & Van Tilburg, T. G. (2006). A six-item scale for overall, emotional and social loneliness: Confirmative tests on new survey data. *Research on Aging*, *28*(5), 582–598. <https://doi.org/10.1177/0164027506289723>.
- De Jong Gierveld, J., & Van Tillburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: Tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Aging*, *7*(2), 121–130. <https://doi.org/10.1007/s10433-010-0144-6>.
- Deters, F. G., & Mehl, M. R. (2013). Does posting Facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science*, *4*(5), 579–586. <https://doi.org/10.1177/1948550612469233>.

- Dhir, A., Yossatorm, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management*, 40(2), 141–152. <https://doi.org/10.1016/j.ijinfomgt.2018.01.012>.
- Domahidi, E. (2018). The associations between online media use and users' perceived social resources: A meta-analysis. *Journal of Computer-Mediated Communication*, 23(4), 181–200. <https://doi.org/10.1093/jcmc/zmy007>.
- Echterhoff, G., Higgins, E. T., & Levine, J. M. (2009). Shared reality: Experiencing commonality with others inner states about the world. *Perspectives on Psychological Science*, 4(5), 496–521. <https://doi.org/10.1111/j.1745-6924.2009.01161.x>.
- Edwards, M. E., & Van Tongeren, D. R. (2019). Meaning mediates the association between suffering and well-being. *The Journal of Positive Psychology*, 15(6), 722–733. <https://doi.org/10.1080/17439760.2019.1651890>.
- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image*, 13, 38–45. <https://doi.org/10.1016/j.bodyim.2014.12.002>.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140. <https://doi.org/10.1177/001872675400700202>.
- Fox, S. (2009). *The social life of health information*. Pew Internet and American Life Project. <https://www.pewresearch.org/internet/2009/06/11/the-social-life-of-health-information/>.
- Frison, E., & Eggermont, S. (2016). Exploring the relationships between different types of Facebook use, perceived online social support, and adolescents' depressed mood. *Social Science Computer Review*, 34(2), 153–171. <https://doi.org/10.1177/0894439314567449>.
- Gao, J., Zheng, P., Jia, Y., Chen, H., Mao, Y., Chen, S., Fu, H., & Dai, J. (2020). Mental health problems and social media exposure during COVID-19 outbreak. *Plos One*, 15(4), e0231924. <https://doi.org/10.1371/journal.pone.0231924>.
- Gebel, M. (2020). *Fighting through coronavirus isolation: 4 people share their tech habits*. Digital Trends. <https://www.digitaltrends.com/social-media/fighting-through-coronavirus-isolation-4-people-share-their-tech-habits/>.
- Gerson, J., Plagnol, A., & Corr, P. J. (2017). Passive and active Facebook use measure (PAUM): Validation and relationship to reinforcement sensitivity theory. *Personality and Individual Differences*, 117, 81–90. <https://doi.org/10.1016/j.paid.2017.05.034>.
- Gilmour, J., Machin, T., Brownlow, C., & Jeffries, C. (2020). Facebook-based social support and health: A systematic review. *Psychology of Popular Media*, 9(3), 328–346. <https://doi.org/10.1037/ppm0000246>.
- Greenberg, J., Solomon, S., & Arndt, J. (2008). A basic but uniquely human motivation: Terror management. In J. Y. Shah, & W. L. Gardner (Eds.), *Handbook of motivation science* (pp. 114–134). Guilford.
- Hall, J. A. (2018). Energy, episode, and relationship: A test of communicate bond belong theory. *Communication Quarterly*, 66(4), 380–402. <https://doi.org/10.1080/01463373.2017.1411377>.
- Hall, J. A. (2019). How many hours does it take to make a friend? *Journal of Social and Personal Relationships*, 36(4), 1278–1296. <https://doi.org/10.1177/0265407518761225>.

- Hall, J. A., & Davis, D. C. (2017). Proposing the communicate bond belong theory: Evolutionary intersections with episodic interpersonal communication. *Communication Theory*, 27(1), 21–47. <https://doi.org/10.1111/comt.12106>.
- Handley, L. (2020). *Here's how our digital lives might look in a post-pandemic world*. CNBC. <https://www.cnn.com/2020/04/14/heres-how-our-digital-lives-might-look-in-a-post-coronavirus-world.html>.
- Hayes, A. F. (2012). *Process: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling*. AF Hayes. <http://www.afhayes.com/public/process2012.pdf>.
- Helm, P. J., Lifshin, U., Chau, R., & Greenberg, J. (2019). Existential isolation and death thought accessibility. *Journal of Research in Personality*, 82, 1-14. <https://doi.org/10.1016/j.jrp.2019.103845>.
- Helm, P. J., Rothschild, L. G., Greenberg, J., & Croft, A. (2018). Explaining sex differences in existential isolation research. *Personality and Individual Differences*, 134, 283-288. <https://doi.org/10.1016/j.paid.2018.06.032>.
- Helm, P. J., Greenberg, J., Park, Y. C., & Pinel, E. C. (2019). Feeling alone in your subjectivity: Introducing the state trait existential isolation model (STEIM). *Journal of Theoretical Social Psychology*, 3(3), 146–157. <https://doi.org/10.1002/jts5.41>.
- Helm, P. J., Jimenez, T., Bultmann, M., Lifshin, U., Greenberg, J., & Arndt, J. (2020). Existential isolation, loneliness, and attachment in young adults. *Personality and Individual Differences*, 159, 1-8. <https://doi.org/10.1016/j.paid.2020.109890>.
- Hicks, J. A., Schlegel, R. J., & King, L. A. (2010). Social threats, happiness, and the dynamics of meaning in life judgments. *Personality and Social Psychology Bulletin*, 36(10), 1305–1317. <https://doi.org/10.1177/0146167210381650>.
- Judd, C. M., & Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation Review*, 5(5), 602–619. <https://doi.org/10.1177/0193841x8100500502>.
- Keoeze, E., & Popper, N. (2020, April 7). The virus changed the way we internet. *The New York Times*. <https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html>.
- Kim, J. Y., Chung, N., & Ahn, K. M. (2013). Why people use social networking services in Korea: The mediating role of self-disclosure on subjective well-being. *Information Development*, 30(3), 1–12. <https://doi.org/10.1177%2F0266666913489894>.
- King, L. A., Heintzelman, S. J., & Ward, S. J. (2016). Beyond the search for meaning: A contemporary science of the experience of meaning in life. *Current Directions in Psychological Science*, 25(4), 211–216. <https://doi.org/10.1177/0963721416656354>.
- Krasnova, H., Widjaja, T., Buxmann, P., Wenninger, H., & Benbasat, I. (2015). Research note—Why following friends can hurt you: An networking sites among college-age users. *Information Systems Research*, 26(3), 585–605. <https://doi.org/10.1287/isre.2015.0588>.
- Lambert, N. M., Stillman, T. F., Hicks, J. A., Kamble, S., Baumeister, R. F., & Fincham, F. D. (2013). To belong is to matter: Sense of belonging enhances meaning in life. *Personality and Social Psychology Bulletin*, 39(11), 1418–1427. <https://doi.org/10.1177/0146167213499186>.
- Lin, L. (2021). Longitudinal associations of meaning in life and psychosocial adjustment to the COVID-19 outbreak in China. *British Journal of Health Psychology*, 26(2), 525–534. <https://doi.org/10.1111/bjhp.12492>.

- Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods*, *49*(2), 433–442. <https://doi.org/10.3758/s13428-016-0727-z>.
- Liu, D., Wright, K. B., & Hu, B. (2018). A meta-analysis of social network site use and social support. *Computers & Education*, *127*(1), 201–213. <https://doi.org/10.1016/j.compedu.2018.08.024>.
- Lou, L. L., Yan, Z., Nickerson, A., & McMorris, R. (2012). An examination of the reciprocal relationship of loneliness and Facebook use among first-year college students. *Journal of Educational Computing Research*, *46*(1), 105–117. <https://doi.org/10.2190/ec.46.1.e>.
- Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). The associations between problematic Facebook use, psychological distress and well-being among adolescents and young adults: A systematic review and meta-analysis. *Journal of Affective Disorders*, *226*, 274–281. <https://doi.org/10.1016/j.jad.2017.10.007>.
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, *12*(1), 23–44. <https://doi.org/10.1037/1082-989X.12.1.23>.
- Meier, A., & Reinecke, L. (2020). Computer-mediated communication, social media, and mental health: A conceptual and empirical meta-review. *Communication Research*, *48*(8), 1–28. <https://doi.org/10.1177/0093650220958224>.
- Mellish, T. I., Luzmore, N. J., & Shahbaz, A. A. (2020). Why were the UK and USA unprepared for the COVID-19 pandemic? The systemic weaknesses of neoliberalism: a comparison between the UK, USA, Germany, and South Korea. *Journal of Global Faultlines*, *7*(1), 9–45. <https://doi.org/10.13169/jglobfaul.7.1.0009>.
- Nunnally, J. C. (1978). *Psychometric theory* (3rd ed). McGraw-Hill.
- Orben, A. (2020). Teenagers, screens and social media: A narrative review of reviews and key studies. *Social Psychiatry and Psychiatric Epidemiology*, *55*(4), 407–414. <https://doi.org/10.1007/s00127-019-01825-4>.
- Pennington, N. (2021). Communication outside of the home through social media during COVID-19. *Computers in Human Behavior Reports*, *4*, 100118. <https://doi.org/10.1016/j.chbr.2021.100118>.
- Perlman, D., & Peplau, L. A. (1981). Toward a Social Psychology of Loneliness. In S. Dwak, & R. Gilmour (Eds.), *Personal Relationships in Disorder* (pp. 32–56). London: Academic Press.
- Pew Research Center (2019). *Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018. United States*. <https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/>.
- Pfefferbaum, B., & North, C. S. (2020). Mental health and the Covid-19 pandemic. *New England Journal of Medicine*, *383*(12), 510–512. <https://doi.org/10.1056/NEJMp2008017>.
- Pieters, R. (2017). Meaningful mediation analysis: Plausible causal inference and informative communication. *Journal of Consumer Research*, *44*(3), 692–716. <https://doi.org/10.1093/jcr/ucx081>.
- Pinel, E. C., Long, A. E., Murdoch, E. Q., & Helm, P. (2017). A prisoner of one's own mind: Identifying and understanding existential isolation. *Personality and Individual Differences*, *105*, 54–63. <https://doi.org/10.1016/j.paid.2016.09.024>.
- Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, *62*, 155–167. <https://doi.org/10.1016/j.chb.2016.03.084>.

- Rae, J. R., & Lonborg, S. D. (2015). Do motivations for using Facebook moderate the association between Facebook use and psychological. *Frontiers in Psychology, 6*, 771-779. <https://doi.org/10.3389/fpsyg.2015.00771>.
- Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry, 52*, 102066. <https://doi.org/10.1016/j.ajp.2020.102066>.
- Scharkow, M. (2016). The accuracy of self-reported internet use—A validation study using client log data. *Communication Methods and Measures, 10*(1), 13–27. <https://doi.org/10.1080/19312458.2015.1118446>.
- Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social networking sites, depression, and anxiety: A systematic review. *JMIR Mental Health, 3*(4), e50. <https://doi.org/10.2196/mental.5842>.
- Shaw, A. M., Timpano, K. R., Tran, T. B., & Joormann, J. (2015). Correlates of Facebook usage patterns: The relationship between passive Facebook use, social anxiety symptoms, and brooding. *Computers in Human Behavior, 48*, 575-580. <https://doi.org/10.1016/j.chb.2015.02.003>.
- Statista (2020). *In-home media consumption due to the coronavirus outbreak among internet users worldwide as of March 2020, by country*. Statista.com. <https://www.statista.com/statistics/1106498/home-media-consumption-coronavirus-worldwide-by-country/>.
- Steger, M. F. (2017). Meaning in life and wellbeing. In M. Slade, L. Oades, & A. Jordan (Eds.), *Wellbeing, recovery, and mental health* (pp. 75–85). Cambridge University Press.
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology, 53*(1), 80–93. <https://doi.org/10.1037/0022-0167.53.1.80>.
- Stillman, T. F., Baumeister, R. F., Lambert, N. M., Crescioni, A. W., DeWall, C. N., & Fincham, F. D. (2009). Alone and without purpose: Life loses meaning following social exclusion. *Journal of Experimental Social Psychology, 45*(4), 686–694. <https://doi.org/10.1016/j.jesp.2009.03.007>.
- Swann, W. B., Stein-Seroussi, A., & Giesler, R. B. (1992). Why people self-verify. *Journal of Personality and Social Psychology, 62*(3), 392-401. <https://doi.org/10.1037/0022-3514.62.3.392>.
- Sy, K. T. L., Martinez, M. E., Rader, B., & White, L. F. (2021). Socioeconomic disparities in subway use and COVID-19 outcomes in New York City. *American Journal of Epidemiology, 190*(7), 1234–1242. <https://doi.org/10.1093/aje/kwaa277>.
- Thomas, L., Orme, E., & Kerrigan, F. (2020). Student loneliness: The role of social media through life transitions. *Computers & Education, 146*, 1-11. <https://doi.org/10.1016/j.compedu.2019.103754>.
- Tobin, S. J., Vanman, E. J., Verreynne, M., & Saeri, A. K. (2014). Threats to belonging on Facebook: Lurking and ostracism. *Social Influence, 10*(1), 1-11. <https://doi.org/10.1080/15534510.2014.893924>.
- Trzebiński, J., Cabański, M., & Czarnecka, J. Z. (2020). Reaction to the COVID-19 pandemic: The influence of meaning in life, life satisfaction and assumptions on world orderliness and positivity. *Journal of Loss and Trauma, 25*(6–7), 1–14.
- Usher, K., Bhullar, N., & Jackson, D. (2020). Life in the pandemic: Social isolation and mental health. *Journal of Clinical Nursing, 29*(15–16), 2756–2757. <https://doi.org/10.1111/jocn.15290>.

- Vannucci, A., Flannery, K. M., & Ohannessian, C. M. (2017). Social media use and anxiety in emerging adults. *Journal of Affective Disorders*, 207, 163-166. <https://doi.org/10.1016/j.jad.2016.08.040>.
- Vannucci, A., & Ohannessian, C. M. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48(8), 1469-1493. <https://doi.org/10.1007/s10964-019-01060-9>.
- Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., YbarraJonides, O.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>.
- Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation*. MIT Press.
- Wenninger, H., Krasnova, H., & Buxmann, P. (2014). Activity matters: Investigating the influence of Facebook on life satisfaction of teenage users. In M. Avital, J. M. Leimeister, & U. Schultze (Eds.), *Twenty second European conference on information systems* (pp. 1-18). ECIS.
- Wiedermann, W., & von Eye, A. (2015). Direction of effects in mediation analysis. *Psychological Methods*, 20(2), 221-244. <https://doi.org/10.1037/met0000027>.
- Wike, R., Fetterolf, J., & Mordecai, M. (2020). *U.S. image plummets internationally as most say country has handled coronavirus badly*. Pew Research Center. <https://www.pewresearch.org/global/2020/09/15/us-image-plummets-internationally-as-most-say-country-has-handled-coronavirus-badly/>.
- Woods, H. C., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*, 51, 41-49. <https://doi.org/10.1016/j.adolescence.2016.05.008>.
- Yalom, I. D. (1980). *Existential psychotherapy*. New York, NY: Basic Books.
- Yong, E. (2020). How the pandemic defeated America: A virus brought the world's most powerful country to its knees. *The Atlantic*. <https://www.theatlantic.com/magazine/archive/2020/09/coronavirus-american-failure/614191/>.
- Zika, S., & Chamberlain, K. (1992). On the relation between meaning in life and psychological well-being. *British Journal of Psychology*, 83(1), 133-145. <https://doi.org/10.1111/j.2044-8295.1992.tb02429.x>.