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Taking the Social out of Social Media: Social Media Induced Loneliness as a Mechanism for Elevated Depression During the Pandemic

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Pandemic

By

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Abstract

During the COVID-19 pandemic health protocols limited in-person interactions, interrupting the undergraduate experience and prompting students to find virtual ways to connect with their peers. A key goal of this study was to assess whether college students' social media use was a viable replacement for in-person interactions during the pandemic, reducing risk for psychological difficulties that ordinarily accompany social isolation. The purpose of the present study was to evaluate loneliness as a potential mediator underlying the longitudinal relationship between social media use and depression. Self-report data were collected in November 2020 (T1), February 2021 (T2), and May 2021 (T3). The sample consisted of 517 undergraduate students recruited from two liberal arts institutions in the Southeast U.S. Findings from a series of regression analyses showed that T1 reliance on social media was associated with T3 depression; moreover, I obtained evidence suggesting that T2 loneliness was a mediator of this association. In other words, students who reported a higher reliance on social media at T1 also reported greater levels of loneliness at T2 which predicted elevated levels of depression at T3. Findings suggest that social media may not be a viable replacement for face-to-face interactions, perhaps because people require in-person connections to satiate their basic need to belong. Results also suggest that bolstering personal connections may be important for reducing risk for depression on college campuses.

Key words: Social media, loneliness, depression, COVID-19, undergraduate students, addiction

Taking the Social out of Social Media: Social Media Induced Loneliness as a Mechanism for Elevated Depression During the Pandemic

With the COVID-19 pandemic wreaking havoc across the world, colleges in the U.S. were shut down in March of 2020 and within a one-week period, classes at almost 60% of 4-year institutions shifted to online instruction (Marsicano et al., 2020). When finally returning during the fall of 2020, colleges announced a variety of educational models for operation. At the beginning of October, about 10% of nearly 3000 universities opted to be fully online, 4% returned to fully in person, and the majority adopted a hybrid model, with part in person and part online (Chronicle of Higher Education, 2020). The COVID-19 pandemic completely changed the layout of our social experience; for an extended period of time, face-to-face interactions were typically limited to only a close "covid bubble" of direct family members and close friends. Strict social distancing guidelines were imposed on most college campuses alike to prevent the spread of the deadly virus. Such unprecedented changes transformed the entire college experience, uprooting both students' education, and social life. Unfortunately, college became a time marked by increased isolation and elevated levels of depression.

One study out of Boston University found that the levels of depression among adults, ages 18 and older, in the US jumped from 8.5 percent to a staggering 27.8% in 2020. The prevalence of elevated depressive symptoms persisted, reaching a height of 32.8% in 2021 (Ettman et al., 2022). Rates of depression, specifically among college students, have also significantly increased throughout the pandemic. A study conducted by the World Mental Health International College Student Initiative on two different campuses in the UK - NI and ROI - found that levels of depression symptoms during year one of the pandemic increased by over ten percent in one college. While the increase in rates of depression was not as great at ROI, nearly a

quarter of the students suffered from probable depression at year two (McLafferty et al., 2021). Another study conducted at the University of Pittsburgh found that the proportion of participants at risk for clinical depression ranged from 46% to 61% pre-pandemic and up to 90% among the same population following the onset of the pandemic (Giuntella et al., 2021). Such elevated levels of depression elicit great concern within the clinical community; it is important to identify possible causes.

Changes in social relationships that accompanied the procedures of COVID-19 might explain fluctuations in levels of depression. Unfortunately, health protocols implemented by colleges to prevent the transmission of coronavirus limited students' ability to explore their identities and forge connections through extracurricular activities and other in person avenues normally available to college students (Kochel et al., 2022). This restrictive nature of college campuses was particularly disruptive for college students who rely on their peers for connection. Belonging is especially relevant for college students as establishing close bonds with peers is an important developmental task associated with emerging adulthood (Kochel et al., 2022). When considering a person's satisfaction with their social life, loneliness is an important concept. Loneliness is defined as the "discrepancy between one's desired and achieved levels of social interaction" (Satici, 2019). Dissatisfaction with social relationships can result in feelings of loneliness as belonging is a basic human need. According to the need-to-belong theory, belonging is a basic motivational need that is vital to developing and maintaining intimate, positive, and durable relations with others (Baumeister, 2012; Baumeister & Leary, 1995). Due to the restrictions imposed on in-person interactions, college students experienced heightened isolation; in order to avoid feelings of loneliness, students needed to find alternative ways to

engage in interpersonal relationships and strengthen their social connections. One such possible method to facilitate interpersonal connection is social media.

With the rise of social networking and social media, the relevance of online communities has increased throughout recent years. Even prior to the pandemic, social media platforms such as Tik Tok, Snapchat, Instagram, and instant message applications such as WhatsApp and GroupMe played a role in communication and connectedness. Specifically, during the pandemic, researchers found that social media use increased across every demographic during the pandemic (Rosen et al., 2022). At the first wave of data collection in April 2020, 70% of survey respondents reported an increase in social media use whereas at the second wave in April 2021, 89% of respondents reported an increase in social media use or stable usage from the first wave (Rosen et al., 2022). Despite the augmentation in social media use throughout the pandemic, there are conflicting perspectives on the function of social media and its impact on individuals' wellbeing at this time.

Social Media Use: A Double-Edged Sword

Theory and evidence suggest that, in some cases, social media use *contributes* to well-being, but there is also evidence consistent with the alternate perspective–that social media *undermines* well-being. Previous research on social media use pre-pandemic suggests that what truly matters when measuring internet use is the level of reliance on social media. Smartphone usage that traverses into the overly reliant or addictive realm pose risk for significant adverse impacts on depression and satisfaction with life (Kil et al., 2021). Social media, in particular, fosters loneliness when it is used with maladaptive intent, such as trying to escape from the social world rather than forming new or bolstering existing connections (Latikka et al., 2022). Some researchers refer to an unhealthy reliance on social media as Problematic Social Media

Use (PSMU), which can be defined as having excessive concern about social media and devoting too much time to social media such that it impairs other social activities, jobs, school, interpersonal relationships, and wellbeing (Shensa et al., 2017). Research suggests that PSMU makes an independent contribution to depressive symptoms, indicating that it might not be the amount of time spent on social media impacting mental wellbeing but the intention of media usage (Shensa et al., 2017). Although this research suggests that social media use may exert a negative effect on one's mood, there is conflicting evidence suggesting that it is *beneficial* to individuals' wellbeing and satisfaction with life when used for coping or in lieu of other maladaptive behaviors (Kil et al., 2021). Social media use may be adaptive if it results in the creation of new friendships and enhancement of existing ones (Nowland et al., 2017). In cyberspace, people tend to be more open and uninhibited (Suler, 2004), prompting greater self-disclosure and a more pronounced expressiveness thereby increasing interpersonal intimacy and facilitating bonding (Barak et al., 2008). Furthermore, for socially active individuals, social media offers the opportunity for more interactions with others; a highly connected virtual space to supplement offline communities (Latikka et al., 2022). One study found that college students who check their social media for an appropriate amount of time rather than excessively, experience lower levels of depression, anxiety, and stress (Lepp et al., 2016). Accordingly, one aim of this study was to investigate the associations between social media use and a key indicator of wellbeing - depression. A second aim was to propose and test factors that might explain these links. One way that social media might contribute to well-being (or lack thereof) is through the mediating variable of loneliness.

Associations Between Social Media and Loneliness

Social media may either promote or interfere with individuals' feelings of loneliness. When people rely on technology to escape the real world and withdraw from "social pain," feelings of loneliness may increase (Nowland & Cacioppo, 2018). High investment in social media has also been linked to greater depression (Neira & Barber, 2014). However, in the absence of tangible personal connections, it is possible that students turned to social media and that social media tempered levels of loneliness. Online communities can serve as avenues for social support (Robinson & Pond, 2019) which can have direct effects on physical health and well-being during stressful life events (Cohen & Wills, 1985). When the internet is used as a means to enhance existing relationships and forge new social connections, it can be helpful in reducing loneliness. Previous literature adopts the term social media bubbles to describe online communities that are identity-driven and based on the basic human need of relating to other similar people to create a supportive peer network (Latikka et al., 2018). Individuals involved in these social media identity bubbles demonstrated lower loneliness during the pandemic (Latikka et al., 2018). Existing literature, therefore, presents two competing theories regarding social media's role in interpersonal interactions. These theories have not been directly explored during the pandemic, which presents a particularly interesting context to consider this form of socialization.

It can be assumed that loneliness is derived from a dearth of interactions with friends, family, and other members of one's inner social group. There are two prevailing hypotheses regarding social media usage and its impact on interpersonal connections - it either displaces or bolsters in person socialization. The displacement hypothesis purports that the passive use of social media displaces quality time spent socializing with others thereby undermining social

connectedness. In contrast, the social augmentation hypothesis argues that social media use strengthens already created bonds through increased maintenance especially in the face of long-distance relationships (Verduyn et al., 2021; Winstone et al., 2021). In the context of the pandemic, where face-to-face interactions were not an option, the two hypotheses take on a new meaning; essentially, the displacement hypothesis was rendered moot as there were few or no in-person interactions to "displace," bolstering the credibility of the social augmentation hypothesis as a predominant theoretical framework. Specifically, during the pandemic, social media was a major method of communication; therefore, it is possible that, for many college students, social media use decreased loneliness thereby also decreasing depression.

The Link Between Loneliness and Depression

College can be a particularly stressful period in which social relationship building is paramount; failure to establish close friends can result in feelings of loneliness and decline in mental health as well as physical wellbeing (Thomas et al., 2020). Loneliness has consistently been shown to be a strong predictor of depression (Cacioppo et al., 2006) which can negatively impact both academic performance and social adjustment (Wohn and LaRose, 2014). Even when controlling for demographics and baseline mental health, loneliness was highly predictive of greater depression over time (Richardson et al., 2017). The relationship between depression and loneliness is particularly pervading for college students - loneliness is a key driver of poor mental health among students in higher education (Thomas et al, 2020). A significant portion of students that seek mental health services on campus are suffering from depression that is attributable to feelings of loneliness (Barbour et al., 2021). One key variable driving this strong relationship between loneliness and depression is the need to belong. A low sense of belonging has been shown to elicit feelings of loneliness thereby increasing depressive symptoms and other

negative mental health outcomes (Barbour, 2021). Overall, the connection between loneliness and depression specifically within the college population is clear.

Overview of the Present Study

Prior to the pandemic, literature enumerating the connection between social media reliance and depression showed a well-established positive correlation. My hypothesis for this present study is that greater reliance on social media among college students will be associated with higher levels of loneliness which will then predict higher levels of depression. However, when considering the pandemic, social media became the only viable source of social connection. Thus, it is possible that those reliant on social media experienced less loneliness resulting in less depression. The present study will contribute to the growing literature surrounding social media use and its influence on students' wellbeing through the unique perspective of the pandemic. Another intent of this research is to explore whether the relationship between depression and loneliness as it is currently understood will hold in a time of isolation. The pandemic, and specifically the lack of interpersonal interactions and heightened levels of depression, present the opportunity to explore hypotheses regarding social media use during a time when college students experienced more isolation than is typical. While research has explored the connections between individual links, few studies have explored social media as it connects to levels of depression through the mechanisms of loneliness.

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Method

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Participants

The sample consisted of 517 college students (54.7% female, 42% male, 0.6% non-binary or prefer to self-describe; Mage = 19.52, SD=1.26) recruited from two medium sized liberal arts

institutions in Southeastern United States. The percent of the sample (71.2% vs 28.8%) drawn from each institution is approximately proportional to student enrollment (3,161 vs 993).

Participants were recruited from each grade level with the sample comprising 25.3% first years, 39.5% 2nd year, 13.5% 3rd year, 19.5% 4th year, and 2.2% 5th year students. The majority of the sample was from the United States (86.8% domestic; 13.1% international). Half (49.5%) of the participants self-identified as white. Of the rest, 22.1% of participants self-identified as Asian, 7.7% as Black or African American, 7.4% as Hispanic or Latino, and 2.1% identified with another race or ethnicity. There was also 11.2% of participants who reported identifying with more than one racial or ethnic category.

The highest level of education that participants' primary caregivers reached was reported with 12.3% completing some or all of college, 11.3% completing some college, 27.7% receiving a bachelor's degree, 27.7% receiving a Doctorate, Medical or Law degree, and 1.6% obtaining another form of graduate degree. Annual family income was also collected: 8.5% of participants reported a family income under $25,000, $13.6% reported $25,000-$49,999, 14.4% reported $50,000-$74,999, 12.9% reported $75,000-$99,999, 18.8% reported $100,000-$149,999 and 31.8% reported a total family income over $150,000.

At the time of data collection, COVID-19 was rampant across the country. Therefore, efforts were underway to reduce virus transmission that impacted participants' home and social environments. The living situation of students at both institutions greatly varied. Most students elected to return to campus and were living in campus housing (70%). Other students (20.7%) were living at home or off campus but not at home (8.7%). Similar to the housing situation, each of the two institutions were conducting classes in many different formats such as in-person classes (masked and socially distanced), hybrid classes (half online and half in-person), and fully

online classes. Even students fully on campus still had at least some online classes. Only 18.2% of participants reported having no online classes with 27.3% having four or more online classes. Some students had no in-person classes (27.5%) whereas a mere 17.8% of students reported having four or more in person classes. Aside from classes, other typical extracurricular activities on campus were restricted, prompting some organizations and clubs to shift meetings online or temporarily stop operations. Dining halls moved to a majority take out structure and athletic teams either stopped playing or were limited.

Procedure

Data was collected at three different time points throughout the pandemic: November 2020, February 2021, and May 2021. Permission to conduct this research was obtained from each participating university's Institutional Review Board. Recruitment messages were sent to students through the daily email forum used by the universities to inform students of upcoming events, news, and research on campus. In addition, information regarding the study was also sent via GroupMe. The content of these recruitment emails or messages included a link with QR code that connected individuals to a web-based survey.

All undergraduate students of at least 18 years of age and enrolled in either university were eligible to participate in this study. Informed consent was acquired prior to the study in which participants were told that all responses would be confidential, and that consent could be withdrawn anytime throughout the study. Participants were instructed to complete the survey on psychosocial and academic adjustment during the pandemic. The survey was expected to take about 25 minutes to complete. Therefore, responses that were completed in under 10 minutes were omitted as that is realistically too little time to provide a meaningful response to survey questions. Once the survey was completed, participants were redirected to a debriefing page that

included a short description of the study's purpose and provided counseling or support resources in case participants were experiencing any psychological distress post-survey. As compensation, participants received an Amazon gift card upon survey completion.

Measures

Loneliness

The 10-item Loneliness in Context scale (Asher & Weeks, 2014) was leveraged to assess participants' feelings of loneliness in college. Participants were asked to indicate whether they agreed with statements such as "Class is a lonely place for me" and "My free time is a lonely time for me" using a 5-point Likert Scale (1 = strongly disagree to 5 = strongly agree). Overall loneliness scores were computed by averaging across all ten items for each participant (α = .90).

Depression

To measure depressive symptoms, participants completed the 20-item Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). Participants were asked how often they experienced a specific feeling from a given list during the past few weeks. Example items included in the scale are "I was bothered by things that usually don't bother me" and "I felt everything I did was an effort." Responses were recorded on a 4-point Likert scale with 0 = rarely or none of the time to 3 = most or all of the time. Each participants' depression score was found by summing across all items. Higher scores mean higher levels of depression. Any score of 16 or greater may present a risk for clinical depression.

Social Media Use

An adapted version of Social Media Use Integration Scale (SMUIS; Jenkins-Guarneri et al., 2013) was used to evaluate participants' self-perception of social media and their emotional stake in social media. A subscale was established that captures the degree to which participants

are reliant on social media for the interpersonal connections. The 6-item subscale includes the following items: "I get upset when I can't log on to social media," "I prefer to communicate with others mainly through social media," "I would like it if everyone used social media to communicate," "I feel disconnected from friends when I have not logged onto social media," "I would be disappointed if I could not use social media at all," and "Social media plays an important role in my social relationships." Participants indicated their level of agreement with each statement using a 6-point Likert scale ranging from strongly disagree =1 to strongly agree = 6. Internal reliability of the subscale is adequate with a Cronbach's alpha .857.

Results

Descriptive Statistics

Descriptive statistics and bivariate correlations were obtained for all key variables. Refer to Table 1. Mean student responses on the social media reliance scale at T1 ($M = 2.79$, $SD = 1.07$) indicate that on average students "disagree somewhat" with the items. On average, students reported a relatively high level of depression that may be indicative of clinical levels at T3 ($M = 22.3$, $SD = 11.57$). The means for loneliness at T2 ($M = 2.72$; $SD = .90$) indicate that students on average feel neutral towards statements of loneliness - neither reporting feeling lonely nor the opposite.

Pearson correlations were run in order to examine the associations between key study variables (see Table 1). All variables were significantly correlated with each other. Reliance on social media at T1 showed a weak, positive correlation with T2 ($r = .190$) loneliness as well as T3 depression ($r = .150$). This suggests that greater reliance on social media predicts higher levels of both depression and loneliness. Loneliness at T2 was strongly correlated in the positive

direction with depression at T3 ($r = .572$). People who experience more depressive symptoms also experience greater feelings of loneliness.

Mediation Analyses

To evaluate whether the mediator of T2 loneliness explains the association between T1 social media reliance and levels of T3 depression, I conducted a series of multiple regressions using the approach of Aiken & West (1991). The first regression was to test for a total effect (*c*). T1 Social media reliance was found to significantly predict T3 depression ($b = 1.501$, $t = 2.761$, $p = .006$) and explained a significant proportion of variance in depressive symptoms scores, $R^2 = .019$, $F(1, 397) = 7.622$, $p = .006$. These findings suggest that higher reliance on social media is related to higher levels of subsequent depressive symptoms. The next regression assessed the path from X to M (independent variable to mediator; *a* path). I found that T1 social media reliance explained a significant proportion of variance in T2 loneliness $R^2 = .032$, $F(1, 397) = 13.122$, $p < .001$ such that T1 social media reliance predicts feelings of T2 loneliness ($b = .153$, $t = 3.622$, $p < .001$). This suggests that higher reliance on social media is also related to higher levels of loneliness. I conducted a third regression to examine the path from M to Y (mediator to the dependent variable; *b* path) and found that T2 loneliness significantly accounted for variance in T3 depression $R^2 = .327$, $F(1, 397) = 192.373$, $p < .001$. Reported T2 loneliness was shown to predict T3 depression ($b = 7.309$, $t = 13.870$, $p < .001$), demonstrating that greater feelings of T2 loneliness are correlated with greater levels of T3 depressive symptoms. The fourth regression explored the direct effect (*c'*) from T1 social media reliance to T3 depression when controlling for the mediator of loneliness. T1 social media reliance no longer predicted T3 depression after controlling for levels of loneliness ($b = .395$, $t = .863$, $p = .389$). The predictor variables of T1 social media reliance and T2 loneliness did explain a significant proportion of the variance in T3

depressive symptoms $R^2 = .328$, $F(2, 397) = 96.497$, $p < .001$. Because of the significant a and b path, and because the direct effect was not significant, there is strong evidence for mediation (MacKinnon, 2008).

As a further test of mediation, I used the macro package RMediation (Tofighi & MacKinnon, 2011) to obtain confidence intervals for the mediated effect based on the distribution of the product of two normally distributed variables. I entered standardized estimates and standard errors for the a and b path (lower confidence limit: .516; upper confidence limit: 1.707). Since 0 does not fall within the confidence interval there is further evidence of a mediated effect. In other words, results suggest that people who have a greater reliance on social media at T1 experience greater feelings of loneliness at T2 which then predicts elevated levels of T3 depression.

Table 1

Means and Bivariate Correlations

Measure	M	SD	1	2	3
T1 Social Media Reliance	2.79	1.07	-		
T2 Loneliness	2.72	.90	.190	-	
T3 Depression	22.3	11.57	.150	.712	-

Note. all correlations are significant at P< .01

Figure 1
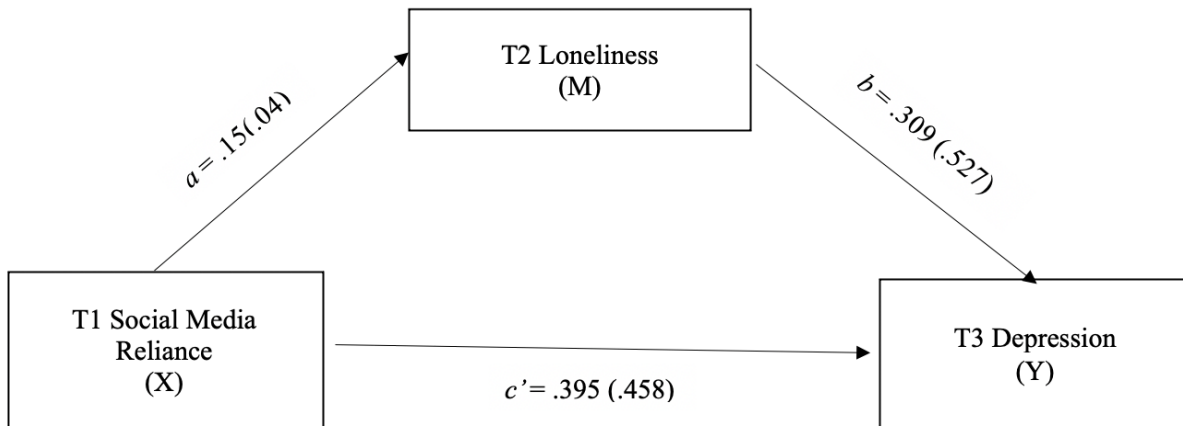
Note. The values presented are unstandardized coefficients with standard error.

Discussion

The purpose of this study was to gain clarity on the impact that social media use has on a student's wellbeing. More specifically, a main aim of this research was to assess the relationship between students' reliance on social media for their social interactions and depression, which is an important indicator of wellbeing and one that commonly affects college-aged students (Kochel et al., 2022; Thomas et al, 2020). Another study aim was to explore whether loneliness is an explanatory mechanism for the link between social media reliance and depression. The present study is unique in that it is situated during the COVID-19 pandemic and therefore has the potential to elucidate possible effects of the heightened isolation accompanying COVID-19 restrictions. Thus, a central question of this research is whether, with minimal face-to-face interactions, social media can be a viable alternative for satiating the human need for socialization. This study found that loneliness mediated the across-time relation between social media reliance and depression. In other words, T1 social media reliance predicted T2 loneliness which in turn predicted T3 depression.

Findings in Depth

This study provides support for the link between emerging adult social media use and heightened depression. Today's college students were raised with social media as a primary mode of communication, spending more time on media platforms than doing any other activity. Previous literature shows that it is not frequency but reliance or a sort of addiction driving the relationship between social media use and depression (Cunningham et al., 2021). A social media addiction is similar to that of substance abuse - an individual experiences compulsions to engage in a behavior despite almost guaranteed negative outcomes (Cunningham et al., 2021). During the pandemic, college students who turned to Instagram feeds for personal connection may have been less likely to seek out activities on their campus that would provide opportunities for meaningful social interactions. Although campus organizations met less in person, they continued operations via Zoom and other COVID approved methods. Students who opted to spend their time on social media may have attended fewer club meetings or assumed fewer campus leadership roles. Furthermore, students reliant on - or even addicted - to social media may have failed to pay attention in class or organizational meetings. Since many things occurred online, it was easy to turn off video and aimlessly search the web instead. Perhaps students reliant on social media also spent less time outdoors or engaging in physical activity, increasing risk of depression (Bélanger et al., 2019).

Another possibility is that in avoiding issues plaguing real life, individuals expose themselves to alternative, virtual stressors such as self-comparisons and the "fear of missing out" (FOMO; Bonsaksen et al., 2021). Literature suggests that FOMO may be a more revelatory measure than simple measures of time or frequency and is associated to a greater degree with negative health outcomes. More specifically, higher levels of FOMO have been associated with

more depressive symptoms (Baker et al., 2016). Research also shows that upward social comparison on social media sites is positively associated with depressive symptoms (Liu, 2017). The feeling underscoring both FOMO and upward social comparisons is envy; seeing photos or videos of others' lives, looking picture perfect, incites a desire to be there or to be somewhere better. Correspondingly, envy on social media has been found to positively predict symptoms of depression (Liu, 2017). All of these things may contribute to greater reliance on social media and, thus, higher incidence of depression.

I also found support for a link between social media use and loneliness, which is consistent with the idea that humans have a fundamental need to belong. Emerging adults may use social media to satisfy important human needs such as those for identity, autonomy, and intimacy (Coyne et al., 2013). Vital to maintaining intimate and meaningful relationships is establishing a sense of belonging. (Baumeister, 2012; Baumeister & Leary, 1995). When this need for belonging is not met, people can experience heightened loneliness (Barbour, 2021). Considering college campuses during the pandemic, students may have turned to social media frequently to replace the in-person conversations they lacked. It is possible that emerging adults seeking to gratify their need to belong primarily through social media sites cannot adequately quench their thirst for connection in virtual spaces. Due to the instantaneous speed of technology, social media is able to mimic the immediacy requirement of social presence, yet platforms fail to accurately replicate the other important component of face-to-face conversations - intimacy (Pittman & Reich, 2016). Without sufficient opportunities for intimacy online or in real life, students perhaps grew increasingly lonely.

My findings also support the already established link between loneliness and depression. Compared to other populations, University students are at a significantly higher risk of feeling

lonely (Ellard et al., n.d.). This is likely due to the unique transition that occurs during college from late adolescence to early adulthood. College is a time for students to explore their self-identity while also building close social connections (Özdemir & Tuncay, 2008). Therefore, the developmental purpose of college students is fraught with social challenges - students often leave home to a strange place where they must find new friends and navigate a novel social landscape. Without parents, students may lack social and emotional support, leading to feelings of loneliness (Özdemir & Tuncay, 2008). Moreover, students who lack the necessary social skills to reach out and create new friendship bonds are further susceptible to loneliness and thereby depression. One study found that loneliness reliably mediated the relationship between student's social skills and levels of depression such that those with worse social skills struggled with a greater sense of loneliness which contributed to elevated depression (Moeller & Seehuus, 2019). With less university organized ways to meet others, like in-person classes and orientation, students needed to rely on their own social skills for creating or maintaining friendships. Students with bad social skills may have failed to form positive bonds leading to loneliness. This widespread loneliness can manifest in depression, which is the biggest culprit of students seeking mental health support on campus (Thomas et al, 2020). Overall, the path from social media reliance to depression as mediated by loneliness is both well-founded theoretically and empirically supported by a plethora of outside literature.

When considering the two hypotheses propounded in existing literature - social displacement and social augmentation - neither are perfectly consistent with the current study. The social displacement hypothesis maintains that passive social media use replaces quality face-to-face social interactions whereas the social augmentation hypothesis espouses social media can be used as supplement to in-person relationships (Verduyn et al., 2021; Winstone et

al., 2021). Due to the isolating environment of the pandemic, students were effectively denied the opportunity for in-person social interaction. Without in-person interactions to displace, it is difficult to assess the validity of the social displacement hypothesis. However, one assumption underlying the social augmentation hypothesis is that social media use is maladaptive, when used not merely as a supplement to already existing friendships but as the relied on method of interaction. The present study tested the social augmentation hypothesis under the extremely unique conditions of the pandemic when in-person interactions were both difficult and limited. Even in situations when social media use is a necessity to maintain interpersonal relationships and a sense of belonging, it appears maladaptive; I found that students forced to rely on social media in the absence of consistent in-person connections still suffered increased loneliness and consequently depression. This lends support to the social augmentation hypothesis such that social media does not appear to be an adequate replacement for true interpersonal opportunities (Winstone et al., 2021). Social media may be beneficial as a supplement but when it occurs in place of in-person connection, it may result in adverse effects.

Limitations and Future Directions

One limitation to the present study is that data were collected only using self-report surveys. While self-reports are useful, people are not always reliable sources of information about themselves. For example, respondents may have underestimated their use of social media. It is often difficult for people to monitor the frequency of their social media use as it tends to be sporadic and accumulate over the course of a day. Therefore, future researchers should use multiple methods of data collection. In addition to self-report data regarding depression and experience of loneliness, perhaps researchers can leverage an app that could track the metrics of a participants' social media use. Moreover, a scale should be included by researchers that

measure student's frequency of in-person interaction to better assess the validity of the social augmentation and displacement hypotheses.

Another limitation is that information regarding what media platform participants were using and how they specifically engaged with the platform was not collected. For example, future research might measure how often participants commented and liked photos versus posting their own content or privately messaging their friends. Past literature suggests that type of social media may change its impact on loneliness. For example, image-based social media in contrast to text-based social media helps increase happiness and life satisfaction due to the enhanced intimacy encouraged by the former (Pittman & Reich, 2016).

Lastly, the present research measured loneliness in a school context. However, loneliness can be triggered by a variety of unsatiated needs. There are two distinct types of loneliness - social and emotional. The former refers to a deficiency of close, intimate relationships and the latter is due to deficient networks of social relationships (Diehl et al., 2018). Literature suggests that frequent social media use results in higher emotional loneliness among young adults but lower social loneliness among older participants (Özdemir & Tuncay, 2008). Future research should measure loneliness both within and separate from academic contexts. Moreover, researchers can explore the difference in the relationship between social media use, loneliness and depression across different age groups and the two distinct types of loneliness.

Key Takeaways

Within the field of psychology, there is a debate over the implications of social media on emerging adults' wellbeing. Some literature highlights positive contributions of social media while others suggest it is the culprit of increased anxiety, depression and stress (Shensa et al., 2017). There is also a wealth of literature exploring how COVID restrictions affected levels of

depression. The present research adds to both of these discussions by showing that social media reliance among college students predicts future depression through the mediating variable of loneliness even during the unique, disconnecting conditions of the pandemic. Essentially, this shows that even when altering the social landscape to remove face-to-face interaction, social media cannot provide the same degree of social satisfaction as in-person. Like the social displacement hypothesis propounds, social media can instead hinder a person's ability to connect with others and harm one's wellbeing. Since depression was related to social media use during the pandemic, then it can be assumed that social media use will also be related to depression in normal social contexts. In other words, if social media was not advantageous for students' well-being when there were no other options to fill their social void, then how can it truly be helpful when a plethora of social opportunities exist from sports clubs to greek life. Therefore, my study findings imply that emerging adults should be wary of social media use and opt for in person social activities rather than scrolling through their social media feed. Limiting social media use could have a positive effect on college students' well-being.

References

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple Regression: Testing and Interpreting Interactions*. SAGE.

Baker, Z. G., Krieger, H., & LeRoy, A. S. (2016). Fear of missing out: Relationships with depression, mindfulness, and physical symptoms. *Translational Issues in Psychological Science*, *2*, 275–282. https://doi.org/10.1037/tps0000075

Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. *Computers in Human Behavior*, *24*(5), 1867–1883. https://doi.org/10.1016/j.chb.2008.02.004

Barbour, E. K., Smallwood, S. W., & Hurt, Y. (2021). Examining social activity, need to belong, and depression among college students. *Journal of American College Health*, *0*(0), 1–9. https://doi.org/10.1080/07448481.2021.1967357

Baumeister, R. F. (2012). Need-to-belong theory. In P. A. M., van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), Handbook of theories of social psychology (Vol. 2, pp. 121–140). Thousand Oaks, CA: SAGE Publications Ltd.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. Psychological Bulletin, 117, 497–529. https://doi.org/10.1037/0033-2909.117.3.497

Bélanger, M., Gallant, F., Doré, I., O'Loughlin, J. L., Sylvestre, M.-P., Abi Nader, P., Larouche, R., Gunnell, K., & Sabiston, C. M. (2019). Physical activity mediates the relationship between outdoor time and mental health. *Preventive Medicine Reports*, *16*, 101006. https://doi.org/10.1016/j.pmedr.2019.101006

Besser, A., Flett, G. L., & Zeigler-Hill, V. (2020). Adaptability to a sudden transition to
   online learning during the COVID-19 pandemic: Understanding the challenges for
   students. Scholarship of Teaching and Learning in Psychology.
   https://doi.org/10.1037/stl0000198.

Bonsaksen, T., Ruffolo, M., Leung, J., Price, D., Thygesen, H., Schoultz, M., & Geirdal, A.
   Ø. (2021). Loneliness and Its Association With Social Media Use During the
   COVID-19 Outbreak. *Social Media + Society*, *7*(3), 20563051211033820.
   https://doi.org/10.1177/20563051211033821

Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkley, L. C., & Thisted, R. A. (2006).
   Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and
   longitudinal analyses. *Psychology and Aging*, *21*, 140–151.
   https://doi.org/10.1037/0882-7974.21.1.140

Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis.
   Psychological Bulletin, *98*, 310–357. https://doi.org/10.1037/0033-2909.98.2.310

Coyne, S. M., Padilla-Walker, L. M., & Howard, E. (2013). Emerging in a Digital World: A
   Decade Review of Media Use, Effects, and Gratifications in Emerging Adulthood.
   Emerging Adulthood, *1*(2), 125–137. https://doi.org/10.1177/2167696813479782

Cunningham, S., Hudson, C. C., & Harkness, K. (2021). Social Media and Depression
   Symptoms: A Meta-Analysis. *Research on Child and Adolescent Psychopathology*,
   49(2), 241–253. https://doi.org/10.1007/s10802-020-00715-7

Deniz, M. E., Hamarta, E., & Ari, R. (2005). An Investigation of Social Skills and
   Loneliness Levels of University Students with Respect to their Attachment Styles in a

Sample of Turkish Students. *Social Behavior and Personality: An International Journal*, *33*(1), 19–32. https://doi.org/10.2224/sbp.2005.33.1.19

Diehl, K., Jansen, C., Ishchanova, K., & Hilger-Kolb, J. (2018). Loneliness at Universities: Determinants of Emotional and Social Loneliness among Students. *International Journal of Environmental Research and Public Health*, *15*(9), Article 9. https://doi.org/10.3390/ijerph15091865

Ellard, O. B., Dennison, C., & Tuomainen, H. (n.d.). Review: Interventions addressing loneliness amongst university students: a systematic review. *Child and Adolescent Mental Health*, *n/a*(n/a). https://doi.org/10.1111/camh.12614

Ettman, C. K., Cohen, G. H., Abdalla, S. M., Sampson, L., Trinquart, L., Castrucci, B. C., Bork, R. H., Clark, M. A., Wilson, I., Vivier, P. M., & Galea, S. (2022). Persistent Depressive Symptoms During COVID-19: A National, Population-Representative, Longitudinal Study of U.S. Adults. *The Lancet Regional Health – Americas*, *5*. https://doi.org/10.1016/j.lana.2021.100091

Giuntella, O., Hyde, K., Saccardo, S., & Sadoff, S. (2021). Lifestyle and mental health disruptions during COVID-19. *Proceedings of the National Academy of Sciences*, *118*(9), e2016632118. https://doi.org/10.1073/pnas.2016632118

Kil, N., Kim, J., McDaniel, J. T., Kim, J., & Kensinger, K. (2021). Examining Associations Between Smartphone Use, Smartphone Addiction, and Mental Health Outcomes: A Cross-Sectional Study of College Students. *Health Promotion Perspectives*, *11*(1), 36–44. https://doi.org/10.34172/hpp.2021.06

King, C. A., Akiyama, M. M., & Elling, K. A. (1996). Self-Perceived Competencies and

    Depression among Middle School Students in Japan and the United States. *The Journal*

    of Early Adolescence, *16*(2), 192–210. https://doi.org/10.1177/0272431696016002004

Kochel, K. P., Bagwell, C. L., & Abrash, R. W. (2022). Empirically Derived Psychological

    Profiles of College Students: Differential Associations With COVID-19 Impact and

    Social Adjustment. *Emerging Adulthood*, *10*(5), 1299–1311.

    https://doi.org/10.1177/21676968221119946

Latikka, R., Koivula, A., Oksa, R., Savela, N., & Oksanen, A. (2022). Loneliness and

    psychological distress before and during the COVID-19 pandemic: Relationships with

    social media identity bubbles. *Social Science & Medicine*, *293*, 114674.

    https://doi.org/10.1016/j.socscimed.2021.114674

Lepp, A., Barkley, J. E., & Li, J. (2017). Motivations and Experiential Outcomes Associated

    with Leisure Time Cell Phone Use: Results from Two Independent Studies. *Leisure*

    Sciences, *39*(2), 144–162. https://doi.org/10.1080/01490400.2016.1160807

Liu, Q.-Q., Zhou, Z.-K., Yang, X.-J., Niu, G.-F., Tian, Y., & Fan, C.-Y. (2017). Upward

    social comparison on social network sites and depressive symptoms: A moderated

    mediation model of self-esteem and optimism. *Personality and Individual Differences*,

    113, 223–228. https://doi.org/10.1016/j.paid.2017.03.037

MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis* (pp. x, 477). Taylor

    & Francis Group/Lawrence Erlbaum Associates.

McLafferty, M., Brown, N., McHugh, R., Ward, C., Stevenson, A., McBride, L., Brady, J.,

    Bjourson, A. J., O'Neill, S. M., Walsh, C. P., & Murray, E. K. (2021). Depression,

    anxiety and suicidal behaviour among college students: Comparisons pre-COVID-19

and during the pandemic. *Psychiatry Research Communications*, *1*(2), 100012.

https://doi.org/10.1016/j.psycom.2021.100012

Moeller, R. W., & Seehuus, M. (2019). Loneliness as a Mediator for College Students'

Social Skills and Experiences of Depression and Anxiety. *Journal of Adolescence*, *73*,

1–13. https://doi.org/10.1016/j.adolescence.2019.03.006

Neira, B. C. J., & Barber, B. L. (2014). Social networking site use: Linked to adolescents'

social self‑concept, self‑esteem, and depressed mood. *Australian Journal of*

Psychology, *66*(1), 56–64. https://doi.org/10.1111/ajpy.12034

Nowland, R., Necka, E. A., & Cacioppo, J. T. (2018). Loneliness and Social Internet Use:

Pathways to Reconnection in a Digital World? *Perspectives on Psychological Science*,

13(1), 70–87. https://doi.org/10.1177/1745691617713052

Özdemir, U., & Tuncay, T. (2008). Correlates of loneliness among university students. *Child*

and Adolescent Psychiatry and Mental Health, *2*(1), 29.

https://doi.org/10.1186/1753-2000-2-29

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

Richardson, T., Elliott, P., & Roberts, R. (2017). Relationship between loneliness and mental

health in students. *Journal of Public Mental Health*, *16*(2), 48–54.

https://doi.org/10.1108/JPMH-03-2016-0013

Robinson, C., & Pond, R. (2019). Do Online Support Groups for Grief Benefit the

Bereaved? Systematic Review of the Quantitative and Qualitative Literature.

Computers in Human Behavior, *100*, 48–59. https://doi.org/10.1016/j.chb.2019.06.011

Rosen, A. O., Holmes, A. L., Balluerka, N., Hidalgo, M. D., Gorostiaga, A., Gómez-Benito, J., & Huedo-Medina, T. B. (2022). Is Social Media a New Type of Social Support? Social Media Use in Spain during the COVID-19 Pandemic: A Mixed Methods Study. *International Journal of Environmental Research and Public Health*, *19*(7), Article 7. https://doi.org/10.3390/ijerph19073952

Satici, S. A. (2019). Facebook Addiction and Subjective Well-Being: A Study of the Mediating Role of Shyness and Loneliness. *International Journal of Mental Health and Addiction*, *17*(1), 41–55. https://doi.org/10.1007/s11469-017-9862-8

Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic Social Media Use and Depressive Symptoms among U.S. Young Adults: A Nationally-Representative Study. *Social Science & Medicine*, *182*, 150–157. https://doi.org/10.1016/j.socscimed.2017.03.061

Suler, J. (2004). The Online Disinhibition Effect. *CyberPsychology & Behavior*, *7*(3), 321–326. https://doi.org/10.1089/1094931041291295

Thomas, L., Orme, E., & Kerrigan, F. (2020). Student Loneliness: The Role of Social Media Through Life Transitions. *Computers & Education*, *146*, 103754. https://doi.org/10.1016/j.compedu.2019.103754

Tofighi, D., & MacKinnon, D. P. (2011). RMediation: An R package for mediation analysis confidence intervals. *Behavior Research Methods*, *43*, 692–700. https://doi.org/10.3758/s13428-011-0076-x

Verduyn, P., Schulte-Strathaus, J. C. C., Kross, E., & Hülsheger, U. R. (2021). When Do Smartphones Displace Face-to-Face Interactions and What to Do About it? *Computers in Human Behavior*, *114*, 106550. https://doi.org/10.1016/j.chb.2020.106550

Winstone, L., Mars, B., Haworth, C. M. A., & Kidger, J. (2021). Social Media Use and

    Social Connectedness among Adolescents in the United Kingdom: A Qualitative

    Exploration of Displacement and Stimulation. *BMC Public Health*, *21*(1), 1736.

    https://doi.org/10.1186/s12889-021-11802-9

Wohn, D. Y., & LaRose, R. (2014). Effects of loneliness and differential usage of Facebook

    on college adjustment of first-year students. *Computers & Education*, *76*, 158–167.

    https://doi.org/10.1016/j.compedu.2014.03.018