LONELINESS AMONG YOUNG ADULTS DURING COVID-19 PANDEMIC: THE MEDIATIONAL ROLES OF SOCIAL MEDIA USE AND SOCIAL SUPPORT SEEKING

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Introduction: As a result of the COVID-19 pandemic, social distancing and shelter-at-home have become necessary for public health and safety in the United States. This period of social isolation may be a risk factor for mental health problems, particularly among young adults for whom rates of loneliness are already high. Young adults also engage in more social media use than other age groups, a form of socialization associated with adverse effects on mental health, including loneliness and depression. **Methods:** The current study examined potential mediating roles of social media use and social support seeking on the relationship between age and loneliness symptoms during the COVID-19 pandemic. Participants included 1,674 adults who completed an online survey regarding depressive symptoms, loneliness, coping strategies, and changes to their daily lives as a result of the pandemic. **Results:** Results indicated that young adults were lonelier than older adults during the pandemic, showed a greater increase in social media use, and lower social support seeking. Higher increases in social media use and lower social support seeking mediated the relationship between age group and loneliness. **Discussion:** Findings are discussed in context of prior research and potential effects of stress and isolation during the pandemic. Clinical implications and suggestions for intervention are elaborated.

Keywords: loneliness in young adults, social support seeking, social media use, COVID-19

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In March of 2020, cases of COVID-19 had reached the United States, and Americans were ordered to stay at home to contain the spread of the virus. While social distancing and quarantine have been necessary for public health, this unique period of stress and social isolation has combined the physical threat of the virus with a threat to mental health. Humans are wired for social connection, which decreases the toll stress takes on physical and emotional health (Brody, 2020; Nausheen, Gidron, Gregg, Tissarchondou, & Peveler, 2007). Psychologists have voiced concerns that the loss of access to social connection will accelerate the already rising rates of loneliness in the United States (Brody, 2020). Prior to social distancing, loneliness was growing steadily, increasing 7% in the last year, from one half of Americans reporting loneliness in 2018 to three out of five in 2019 (Cigna, 2020). As loneliness is itself a known risk factor for mental and physical health problems, such as impaired immune functioning and heart disease (Hawkley & Cacioppo, 2010), research on risk and protective factors for loneliness is critical at this time. Of particular importance to this research are young adults, for whom rates of loneliness are the highest, and who are most likely to experience mental health challenges as they encounter stress (Choo & Marszalek, 2019; Cigna, 2020). Young adults are also the largest represented demographic on social media, which is rising due to social distancing measures, and has been repeatedly demonstrated to contribute to adverse mental health outcomes such as depression and loneliness (Hawkley, Burleson, Bentson, & Cacioppo, 2003; Hawkley & Cacioppo, 2010; Lin, Liu, Niu, & Longobardi, 2020).

LONELINESS

Loneliness is a painful emotional state created by the gap between desired and perceived social connection. This gap may be driven by low quantity or quality of bonds and can be felt regardless of whether one is alone or with others (Hawkley & Cacioppo, 2010; Lee & Goldstein, 2015; Ni, Yang, Zhang, & Dong, 2015; Rokach, 2001). However, research suggests that it is the lack of close relationships that most often predicts loneliness (Segrin & Passalacqua, 2010). Feelings of loneliness can lead to a sense of helplessness or social exclusion, and can reduce life satisfaction by decreasing one's sense of belonging (Mellor, Stokes, Firth, Hayashi, & Cummins, 2018). Across age groups, loneliness is predicted by a lack of meaningful interactions, lack of social support, worsening mental and physical health, and lack of balance in daily activities such as

sleep, recreation, and work (Cigna, 2020). While loneliness is a universal human experience, chronic loneliness and social isolation are associated with a significant number of physical and mental health problems. These problems include increased risk for cardiovascular reactivity to stress, high blood pressure, heart disease, obesity, cognitive decline, anxiety, substance use, suicidality, and depression (Cecen, 2008; Hawkley et al., 2003; Hawkley & Cacioppo, 2010; Lin et al., 2020; Nausheen, Gidron, Gregg, Tissarchondou, & Peveler, 2007).

Most research on loneliness has been conducted with older adults (Rokach, 2001; Luhmann & Hawkley, 2016), but an increasing number of studies have demonstrated that young adults are most at risk of loneliness. Research on young adult relationships has supported the theory that young people experience higher loneliness due to a greater reliance on peer relationships at a time when perceived social support is low (Choo & Marszalek, 2019). Researchers have hypothesized that young adults may be particularly vulnerable to loneliness as they move away from home and are separated from family and childhood support networks (Choo & Marszalek, 2019). More recently, a proposed mechanism for higher rates of loneliness among young adults is higher frequency of social media use (Ni et al., 2015). However, more research is needed to understand the relationships among young adult loneliness, social media use, and social support seeking.

SOCIAL SUPPORT SEEKING

Social support has consistently been associated with less loneliness (Lee & Goldstein, 2015; Lin et al., 2020; Segrin, 2003) and is most often measured through objective support, perceived support, or social support seeking. Prior research indicates that stress and quality of social interactions predicts social support seeking. Perceived social support has been found to buffer individuals undergoing stress from developing loneliness (Lee & Goldstein, 2015; Ni et al., 2015). However, as individuals experience more loneliness, they may experience less social support due to reduced social support seeking, fear of negative evaluation, heightened stress appraisals, and poorer social interactions (Cecen, 2008; Hawkley et al., 2003; Hawkley & Cacioppo, 2010).

Both social support and loneliness have been shown to vary by age. Choo and Marszalek (2019) have suggested several explanations regarding why young adults endorse lower perceived social

support than other age groups. One theory is that lower perceived social support is the result of young adults not yet having had the chance to develop a robust support system. According to Erickson's stages of development, young adults are still working on the challenging tasks of developing identities, relationships, and coping skills, while experiencing greater demands related to autonomy and performance (Choo & Marszalek, 2019; Erickson, 1950). Culture may also play a role, as research suggests that young adults in the U.S. may seek social support less than other age groups due to developmental pressure for increased autonomy combined with cultural values of individualism and self-reliance. Studies suggest that self-isolation may occur more frequently for young adults, who respond to these pressures with perfectionism, self-criticism, and rumination (Choo & Marszalek, 2019). Recent research has explored the expanding role of social media in Western culture, and how it predicts social support seeking or perceived social support among young adults.

SOCIAL MEDIA, SOCIAL SUPPORT SEEKING, AND LONELINESS

Social media is defined as a collection of online platforms for social connection, such as Facebook, Instagram, and Twitter. Social media is expected to become an even more prominent means of communication during the COVID-19 pandemic, as people are unable to leave their houses for non-essential purposes and are prohibited from gathering in person. Prior to COVID-19, social media use was nearly universal among young adults, with 90% using social media (Perrin, 2015). Due to the occurrence of increasing social media use and declines in youth mental health in the past decade, researchers have begun to investigate the connection between these phenomena (Frison & Eggermont, 2015; Hunt, Marx, Lipson, & Young, 2018; Keles, McCrae, & Grealish, 2020; Primack et al., 2017). In particular, researchers have focused on potential impacts of social media use on social support, loneliness, sense of well-being, and depression among young adults (Keles et al., 2020). However, research has been limited, with existing studies yielding conflicting results (Frison & Eggermont, 2015; Keles et al., 2020; Lin et al., 2020). While numerous studies have found a link between social media use and mental health problems (Aalbers, McNally, Heeren, de Wit, & Fried, 2019; Appel, Gerlach, & Crusius, 2016; Hunt et al., 2018; Keles et al., 2020; Primack et al., 2017; Wang, Gaskin, Rost, & Gentile, 2018), others

have found social media use effective for fostering social connection and improving mental health outcomes (Best, Manktelow, & Taylor, 2014; Escobar-Viera et al., 2018; Lin et al., 2020). To make sense of these contradictory findings, researchers have begun to examine potential factors within social media use that may be contributing to diverging mental health outcomes.

One factor which may explain the relationship between social media use and mental health outcomes is users' degree of success in social support seeking (Frison & Eggermont, 2015). There is evidence for the displacement hypothesis, which posits that people who are lonely offline prefer socializing online and spend time online in a manner that displaces offline social interaction (Wang et al., 2018). However, there is also evidence for the stimulation hypothesis in which those who are more socially successful offline can augment in-person bonds with online connection. For example, a study found that when social support seeking led to perceived social support through Facebook, depressed mood of adolescents diminished; however, when social support was not successfully obtained, depressed mood worsened for adolescents (Frison & Eggermont, 2015). If this pattern holds for young adults, their success in obtaining social support online and offline may also create a self-reinforcing cycle.

Other research with young adults has explored whether reasons for social media use and methods of use impact mental health outcomes (Lin et al., 2020). For example, Gordon, Juang, and Syed (2007) found that using social media to cope with personal problems or feel closer to others, heightened depression and social anxiety among undergraduates. Further, while stressful life events appeared to predict social media use for mood management among adolescents (Frison & Eggermont, 2015; Leung, 2006), its use was associated with a lower sense of well-being (Kross et al., 2013). These findings suggest that conditions of greater stress decrease likelihood that social media use will lead to desired social connection. Comparatively, Hunt and colleagues (2018) found that decreasing social media use predicted less loneliness and fewer depressive symptoms in young adults. Another contributing factor for social media use leading to poorer mental health outcomes among young adults may have to do with an individual's ratio of in-person to online friends. Chang, Choi, Bazarova, and Löckenhoff (2015) found that the higher the proportion of close friends to total friends in a user's social media network, the lower their levels of loneliness and social isolation. On average, older adults have a higher proportion of close friends to total friends in their

networks than do young adults, putting the latter group at greater risk of adverse mental health outcomes (Chang et al., 2015). While there is evidence to support the previously mentioned reasons for social media use, one of the most thoroughly studied methods of social media use shown to impact mental health outcomes is the level of engagement with other users.

Many studies have emphasized the distinction between passive and active engagement with social media. Passive use may include scrolling through others' posts, while active use means direct interaction with others (Keles et al., 2020). Active use has been associated with fewer depressive symptoms (Escobar-Viera et al., 2018) and loneliness (Lin et al., 2020) by increasing perceptions of social support. However, most social media use by American adults has been found to be limited to casual interaction (Kim, Sohn, & Choi, 2011), which is more passive and associated with both higher depressive symptoms (Frison & Eggermont, 2016) and decreased affective well-being (Verduyn et al., 2015). Mechanisms for the association between passive social media use and negative mental health outcomes may include viewing others' posts as an unrealistic highlight reel of other users' best moments, negative social comparison, envy (Appel et al., 2016; Verduyn et al., 2015), rumination (Feinstein et al., 2013), low self-esteem (Chen, Fan, Liu, Zhou, & Xie, 2016), loss of concentration, fatigue, and loneliness (Aalbers et al., 2019). These findings may be cause for concern during the COVID-19 pandemic, as the combination of more social media use and higher stress are more likely to encourage avoidance behaviors, such as passive scrolling rather than active engagement with others online.

Prior research has indicated that young adults have the highest levels of loneliness and constitute the highest share of social media users in the United States. The purpose of this study was twofold: first, to extend the current research literature by examining the hypothesis that young adults would report the most loneliness during the COVID-19 pandemic, and second, to examine the possibility that more social media use during COVID-19 would lead to less social support seeking and thereby increase rates of loneliness among young adults.

CURRENT STUDY AND HYPOTHESES

The current study examined the impact of the COVID-19 pandemic on loneliness in young adults, and evaluated the role of social media

use and social support seeking as mediators of the relationship between age and loneliness (see Figure 1). We hypothesized that: (1) young adults would report more loneliness than older adults; (2) young adults would be more likely to report higher social media use than older adults and less likely to report social support seeking than older adults; and (3) higher social media use and lower social support seeking would mediate the relationship between age and loneliness.

METHOD

SAMPLE AND PARTICIPANT SELECTION

Participants were 1674 (M_{age} = 36.4, SD = 12.2; 87.1% female) individuals recruited through social media platforms, such as Facebook. Approximately 10.7% of participants were 18–24 years old, 48.4% 25–34 years old, 20.5% 35–44 years old, 10.3% 45–54 years old, 2.9% 55–59 years old, and 7.2% 60 years or older. Approximately 87.9% identified as White/Caucasian, 4.1% Biracial/Multiracial, 2.7% Black/African American, 3.3% Asian American, 1.0% Other, 0.7% American Indian/Native American, and 0.1% Pacific Islander, and 0.2% did not provide their race. Participant recruitment was initiated in King County, Washington, which was the epicenter of the COVID-19 outbreak in the United States. Snowball recruitment resulted in a national sample in which 19.6 % were in King County, WA; 11.1 % were in non-King County, WA; and 69.3% were in non-WA U.S.

PROCEDURE

Participants completed an online questionnaire that was advertised on social media and administered via Qualtrics, which among other questions assessed participants' depressive symptoms, loneliness, coping strategies, and changes to their day to day activities in response to the COVID-19 pandemic over the past month.

MEASURES

Demographics. General demographic information was collected with author-constructed multiple choice and text entry questions at
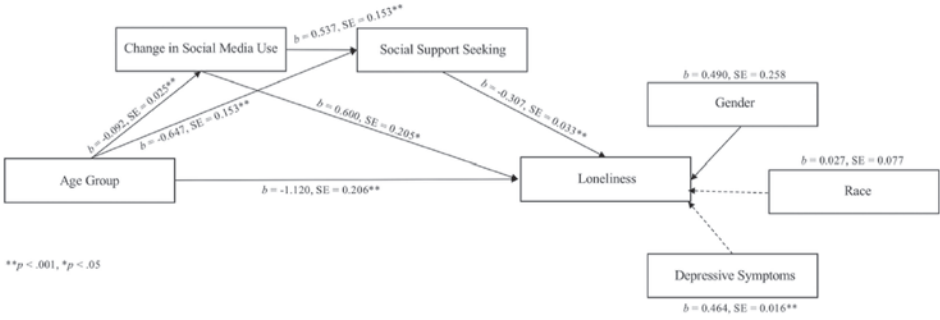
FIGURE 1. Double Mediation Model Where Age Group Predicts Loneliness Through Higher Social Media Use And Lower Social Support Seeking.

the beginning of the baseline questionnaire. Information collected included: biological sex, race, sexual orientation, age, employment status, household size, annual income, and geographical location.

Age. Age was split into a binary variable for ease of comparison. Our young adult group was comprised of 18–34-year-olds, consistent with U.S. Census Bureau and Pew Research Center (Fry, 2017; U.S. Census Bureau, 2019) and compared to adults 35+ years of age.

Social Media Use. Author-constructed multiple choice and text entry questions asked about COVID-19 specific changes in daily activities, including change in time spent on social media. For 16 items, the scale asked, "Due to the COVID-19 pandemic, which daily activities changed for you?" (e.g. spending time with family or exercise) on a scale from −1 (decreased) to 0 (stayed the same) to 1 (increased). Change in time spent on social media was measured in a single item asking whether "spending time on social media (Facebook, Instagram, Twitter, Tik Tok, etc.) had increased, decreased, or stayed the same since the beginning of the pandemic. Researchers at Stanford (Adamson, 2020) use an item similar to ours in their survey, Psychological Stress Associated with the COVID-19 Crisis, which explores changes in daily activities during COVID-19. The daily activities measured include communicating virtually with others. The item can be answered with more, less, or unchanged, which we believe is comparable to the author-constructed item we utilized for social media use. In our own study, we found a

significant positive association between reported increases in social media use and increases in time spent alone ($r = .127$, $p < .01$), as we would expect. We also found a significant positive association between reported increases in social media use and increases in time spent playing video games ($r = .244$, $p < .01$), as we would expect. We believe these associations provide support for the increase in social media use our sample reported.

ULS-8. Loneliness was assessed using the UCLA Loneliness Scale Short Form-8 (ULS-8; Hays & DiMatteo, 1987). The ULS-8 is an 8-item measure, on which participants rated how often they experienced loneliness (e.g., I lack companionship, There is no one I can turn to) over the past month on a scale from 1 (never) to 4 (always). Higher scores indicated a greater degree of loneliness. Previously the ULS-8 has demonstrated a high level of validity and reliability (Doğan, Çötok, & Tekin, 2011; Hays & DiMatteo, 1987; Wu & Yao, 2008). The internal consistency for the current study was $\alpha = 0.84$.

Brief COPE. Social support seeking was assessed using the social support subscales of the Brief COPE (Carver, 1997). The social support scales of the Brief COPE consists of 4 items, on which participants rated how they would respond to a stressful event (e.g., I try to get advice from someone about what to do, I discuss my feelings with someone) over the past month on a scale from 1 (I usually don't do this at all) to 4 (I usually do this a lot). Higher scores indicated a higher degree of social support. In previous studies, the social support scales of the Brief COPE have demonstrated internal consistencies ranging from $\alpha = 0.80$ to 0.87 (Snell et al., 2011). The internal consistency for the current study was $\alpha = .80$.

CESD-10. Depressive symptoms were assessed using the Center for Epidemiologic Studies Depression Scale-10 (CESD-10; Andersen, Malmgren, Carter, & Patrick, 1994). The CESD-10 is a 10-item measure, on which participants rated how often they had experienced depression symptoms (e.g., I felt depressed, my sleep was restless) over the past month on a scale from 0 (rarely or none of the time; <1 day) to 3 (most or all of the time; 5–7 days). Higher scores indicated a greater level of depressive symptomatology, with a score of 10 or higher indicative of clinically significant distress. In previous studies, the CESD-10 has demonstrated internal consistencies ranging from $\alpha = 0.69$ to 0.89, and evidence of concurrent and discriminant validity with other depression symptom checklists (Baron, Davies, & Lund, 2017). The internal consistency for the current study was $\alpha = 0.86$.

RESULTS

ADDRESSING MISSING DATA

Missing data was assessed using the patterns described by Enders (2010). The missing values created a general or haphazard pattern. A total of six participants were excluded from analyses, with two removed due to missing age information and four excluded due to more than 24% missing information (Olinsky, Chen, & Harlow, 2003).

DATA ANALYSES

Analyses were conducted in IBM SPSS 26.0. First, descriptives were calculated for all variables of interest. Second, correlations between age group, loneliness, social support seeking, and change in social media use (SMU) were examined to assess the interrelationship between these variables. Means and standard deviations of variables, along with Pearson's correlation coefficients are reported in Table 1. We were interested in comparing young adults (18–34 years of age) to all other age groups, so age was split into a binary variable.

Data analyses were conducted using PROCESS 3.0 (Hayes, 2012). Bootstrapping procedures were used to test the mediation model shown in Figure 1. Five thousand bootstrap samples were used to calculate the 95% bias-corrected confidence intervals of the conditional indirect effects. Confidence intervals that do not contain zero indicate a significant indirect effect via the specific mediator.

To address Hypotheses 1–3, age group was entered as the independent variable, loneliness as the dependent variable, with change in SMU and social support seeking as mediators. The model tested whether age group predicted loneliness through higher SMU and lower social support seeking during the COVID-19 pandemic. Age group was entered as a binary variable, with 18–34-year-olds as the younger age group (59.1%, $n = 989$), and 35+ as the older group (40.9%, $n = 685$). Gender, depressive symptoms, and racial identity were included as covariates in all analyses. P-values of less than 0.05 were considered statistically significant.

The indirect effect ($b = -0.051$) of age group on loneliness through social media use was statistically significant, with a 95% bias-corrected bootstrap confidence interval entirely below zero (-0.105

to −0.012). The indirect effect (b = .199) of age group on loneliness through social support seeking was statistically significant, with a 95% bias-corrected bootstrap confidence interval entirely above zero (0.099 to 0.304). The indirect effect (b = .015) of age on loneliness through change in social media use and social support seeking was statistically significant, as revealed by a 95% bias-corrected bootstrap confidence interval (0.047 to 0.029). The direct effect of age group on loneliness (b = −1.12) was significantly different from zero, $t(1610)$ = −5.434, SE = .206, p < .001, with a 95% confidence interval (−1.524 to −.716). The total effect of age group on loneliness (b = .163, SE = .058) was statistically different from zero with a 95% confidence interval entirely above zero (.054 to .281). Table 2 presents the indirect and direct effects found in the regression model and the model summary is presented in Figure 1.

DISCUSSION

Results of our study provided support for the first hypothesis, that young adults (18–34-year-olds) would report significantly more loneliness than older adults during the pandemic. This finding is consistent with prior research indicating that this age group is most impacted by loneliness but extends the finding to the unique context of the COVID-19 outbreak (Choo & Marszalek, 2019; Cigna, 2020).

Our second hypothesis was also supported, as we found that young adults reported more increased social media use and less social support seeking compared to older adults during the pandemic. This finding is consistent with the theory that loneliness and fatigue drive passive social media use, which may predict lower social support seeking (Aalbers et al., 2019; Frison & Eggermont, 2015; Wang et al., 2018). This result also supports research by Kim and colleagues (2011), which suggests that Americans primarily use social media passively, rather than actively engaging with others, thereby decreasing time spent on social support seeking. The stress of the pandemic, along with greater time available for social media use, may be exacerbating the effects of these phenomena on young adults at this time.

In line with our third hypothesis, our full model of a double, serial mediation was supported, as greater increase in social media use and lower social support seeking mediated the relationship between the age groups and loneliness during the pandemic. Young adult loneliness during the pandemic was found to be significantly explained by more increases in social media use and less social support seeking.

TABLE 1. Descriptive Statistics And Correlations Among Variables (*N* = 1674)

	M	*SD*	Age group	Δ SMU	COPE	ULS-8
Age group	—	—	—	—	—	—
ΔSMU	0.72	0.50	−0.14**	—	—	—
COPE	11.35	3.04	−0.15**	0.13**	—	—
ULS-8	17.97	5.12	−0.20**	.0.17**	−0.06*	—

Note. Age group is binary (18–34-year-olds compared to 35+), Δ SMU = change in social media use since social distancing began (−1 = decrease, 0 = no change, 1 = increase), COPE = social support seeking, and ULS-8 = loneliness.

p < .05; ** *p* < .01.

Extending prior research literature, we found a complicated relationship between social media use and social support seeking. On one hand, increased social media use was associated with higher loneliness. On the other hand, increased social media use was also associated with greater social support seeking. Taken together, this may mean that there is a piece of social media use that has an adaptive support seeking function, but overall social media use is associated with increased loneliness during the pandemic. This finding might be explained by the method and motivation for social media use within our sample. It is likely that those participants who engaged in active social media use had social support seeking motives and therefore experienced no increase in loneliness, but that the majority of the sample engaged in passive use, known to increase loneliness (Aalbers et al., 2019; Frison & Eggermont, 2016; Lin et al., 2020).

Our findings extend prior research by examining the dual effect of social media use and social support seeking on young adult loneliness at the time of unprecedented social isolation during the COVID-19 pandemic. Our study provides evidence that increased social media use among young adults may be putting this age group at risk for less social support, more loneliness, and other adverse health outcomes. Further research is needed to understand these findings, particularly in the unique context of a global pandemic.

LIMITATIONS

While strengths of this study include the size of sample and proximity of data collection to the beginning of the COVID-19 outbreak,

TABLE 2. Indirect And Direct Effects By Analysis Of The Mediating Relationship Of Change In Social Media Use And Social Support Seeking On Loneliness. All Analyses Include Gender, Race, And Depressive Symptoms As Covariates.

Indirect Effects	effect	SE	95% CI
Age group → ΔSMU → Loneliness	−0.051	0.024	(−0.105, −0.012)
Age group → COPE → Loneliness	0.199	0.054	(0.099, 0.314)
Age group → ΔSMU → COPE → Loneliness	0.015	0.006	(0.047, 0.029)
Direct Effect	**effect**	**SE**	**95% CI**
Age group → Loneliness	−1.120	0.206	(−1.524, −0.716)

Notes. All analyses include gender, race and depressive symptoms are covariate. Age group is binary (18–34-year-olds compared to 35+), ΔSMU = change in social media use since quarantine (−1 = decrease, 0 = no change, 1 = increase), COPE = social support seeking, and ULS-8 = loneliness.

this study also has a number of limitations we would like to address. Given the time-sensitivity of the outbreak, results were not based on a random selection of the national sample and sample characteristics do not mirror U.S. demographics, particularly in regard to biological sex of participants who participated in the study. Follow-up studies should strive for a more balanced demographic sample. Additionally, minority groups were underrepresented in this sample, including gender minorities, sexual minorities, and racial minorities. Follow-up studies would also benefit from developing a more robust understanding of social media use through measures of total time spent on social media, as well as motivations for and methods of use.

FUTURE DIRECTIONS

Research on mechanisms underlying our findings may focus on the impact of the stress created by the pandemic itself, in particular the impact of social isolation. It may be that social isolation drives a particular type of social support seeking or changes the manner in which individuals engage with social media. One hypothesis is that stress causes individuals to engage in more avoidance behaviors on social media, escaping painful thoughts and feelings in the moment only to increase adverse mental health outcomes later on. The motivation to avoid painful internal states may increase likelihood of passive social media use rather than the active engagement with others that protects against loneliness and other negative

outcomes. As suggested by Aalbers and colleagues (2019) prior to the pandemic, mechanisms for this may include passive social media use leading to problems with concentration and fatigue, as well as loneliness, decreased positive affect, and reduced inhibition around checking social media, creating a self-perpetuating cycle of increased cognitive and emotional problems.

Further research on social media use, social support seeking, and their impacts on loneliness among young adults can help inform interventions for use in this pandemic. Although social interactions continue to be confined to online messaging, texting, video-chat and phone, young adults may benefit from healthcare providers encouraging limited social media use and more in person socialization.

A review by Gardiner, Geldenhuys, and Gott, (2018) found that among older adults, the most effective interventions for reducing loneliness involved adaptability, community development, and active engagement. As communities move online, young adults may be encouraged to access effective connection through civic or volunteer groups, exercise classes, skill-building, mindfulness workshops, and the like. Communities providing opportunity for contributions (e.g., volunteering, sharing journal prompts, participating in musical performances) may be more useful for fighting loneliness than those with less interaction and contribution by members. More research is needed to learn how particular online activities may impact loneliness in young adults.

Strategies such as mindfulness may be taught by healthcare providers using telehealth to increase self-awareness of daily activities among young adults, promoting attentional control and increasing ability to choose more effective platforms for satisfying social connection. Mindfulness-based approaches such as Mindfulness Based Stress Reduction have been shown to reduce loneliness in older adults and may prove effective with younger adults as well (Creswell et al., 2012). Additionally, in keeping with Choo and Marszalek (2019), interventions may seek to address cultural beliefs and cognitions that exacerbate loneliness and other adverse mental health outcomes. As young people undergo the stress of the pandemic, they may feel pressure to cope independently, and those with tendencies towards self-criticism, rumination, or depression may especially struggle to ask for support. Prior research suggests use of therapies such as Compassion Focused Therapy to increase self-compassion, a focus on common humanity, and seeking help from others (Choo & Marszalek, 2019).

CONCLUSION

As individuals continue to follow social distancing rules during the COVID-19 pandemic in the United States, the results of this study may provide insight into prevention and intervention strategies to reduce loneliness and associated health risks among young adults. Healthcare providers may use new telehealth platforms to provide young adults with recommendations for achieving satisfying social connections. Recommendations may include a redirection of free time from social media to forms of remote interaction which allow for greater social support. Future studies may examine more demographically balanced samples for greater generalizability of results, as well as investigating pathways to loneliness among clinical samples during the pandemic. It is our hope that this research and resulting interventions can help to counter the growing problem of loneliness in our society and reduce the risk of mental and physical health problems during the COVID-19 pandemic.

REFERENCES

Aalbers, G., McNally, R. J., Heeren, A., de Wit, S., & Fried, E. I. (2019). Social media and depression symptoms: A network perspective. *Journal of Experimental Psychology General*, *148*, 1454–1462. http://doi.org/10.1037/xge0000528

Adamson, M. M. (2020). Psychological stress associated with COVID-19 crisis [Measurement instrument]. Retrieved from https://www.nlm.nih.gov/dr2/Psychological_Stress_Associated_with_the_COVID-19_Crisis_14.pdf

Andersen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale). *American Journal of Preventive Medicine*, *10*, 77–84.

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, *9*, 44–49. https://doi.org/10.1016/j.copsyc.2015.10.006

Baron, E. C., Davies, T., & Lund, C. (2017). Validation of the 10-item center for epidemiological studies depression scale (CES-D-10) in Zulu, Xhosa and Afrikaans populations in South Africa. *BMC Psychiatry*, *17*, 6.

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, *41*, 27–36. https://doi.org/10.1016/j.childyouth.2014.03.001

Brody, J. E. (2020, March 23). *Taking steps to counter the loneliness of social distancing*. The New York Times. https://www.nytimes.com/2020/03/23/well/family/coronavirus-loneliness-isolation-social-distancing-elderly.html

Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, *4*, 92–100

Cecen, A. R. (2008). Effects of gender and loneliness levels on ways of coping among university students. *College Student Journal*, *42*, 510–516.

Chang, P. F., Choi, Y. H., Bazarova, N. N., & Löckenhoff, C. E. (2015). Age differences in online social networking: Extending socioemotional selectivity theory to social network sites. *Journal of Broadcasting & Electronic Media*, *59*, 221–239. https://doi.org/10.1080/08838151.2015.1029126

Chen, W., Fan, C. Y., Liu, Q. X., Zhou, Z. K., & Xie, X. C. (2016). Passive social network site use and subjective well-being: A moderated mediation model. *Computers in Human Behavior*, *64*, 507–514. https://doi.org/10.1016/j.chb.2016.04.038

Choo, P. Y., & Marszalek, J. M. (2019). Self compassion: A potential shield against extreme self-reliance? *Journal of Happiness Studies*, *20*, 971–994. https://doi.org/10.1007/s10902-018-9978-y

Cigna. (2020, January 23). *Cigna takes action to combat the rise of loneliness and improve mental wellness in America.* Cigna. https://www.multivu.com/players/English/8670451-cigna-2020-loneliness-index/

Creswell, J. D., Irwin, M. R., Burklund, L. J., Lieberman, M. D., Arevalo, J. M., Ma, J., & Cole, S. W. (2012). Mindfulness-based stress reduction training reduces loneliness and pro-inflammatory gene expression in older adults: A small randomized controlled trial. *Brain, Behavior, and Immunity*, *26*, 1095–1101. https://doi.org/10.1016/j.bbi.2012.07.006

Doğan, T., Çötok, N. A., & Tekin, E. G. (2011). Reliability and validity of the Turkish Version of the UCLA Loneliness Scale (ULS-8) among university students. *Procedia-Social and Behavioral Sciences*, *15*, 2058–2062.

Enders, C. K. (2010). *Applied missing data analysis*. New York: Guilford press.

Erikson, E. H. (1950). *Childhood and society*. New York: W W Norton & Co.

Escobar-Viera, C. G., Shensa, A., Bowman, N. D., Sidani, J. E., Knight, J., James, A. E., & Primack, B. A. (2018). Passive and active social media use and depressive symptoms among United States adults. *Cyberpsychology, Behavior, and Social Networking*, *21*, 437–443. https://doi.org/10.1089/cyber.2017.0668

Feinstein, B. A., Hershenberg, R., Bhatia, V., Latack, J. A., Meuwly, N., & Davila, J. (2013). Negative social comparison on Facebook and depressive symptoms: Rumination as a mechanism. *Psychology of Popular Media Culture*, *2*, 161–170. https://doi.org/10.1037/a0033111

Frison, E., & Eggermont, S. (2015). The impact of daily stress on adolescents' depressed mood: The role of social support seeking through Facebook. *Computers in Human Behavior*, *44*, 315–325. https://doi.org/10.1016/j.chb.2014.11.070

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*, 153–171. https://doi.org/10.1177/0894439314567449

Fry, R. (2017, October 11). *The share of Americans living without a partner has increased, especially among young adults*. Pew Research Center Fact Tank. http://pewrsr.ch/2kG037Q

Gardiner, C., Geldenhuys, G., & Gott, M. (2018). Interventions to reduce social isolation and loneliness among older people: An integrative review. *Health & Social Care in the Community*, *26*, 147–157. https://doi.org/10.1111/hsc.12367

Gordon, C. G., Juang, L. P., & Syed, M. (2007). Internet use and well-being among college students: Beyond frequency of use. *Journal of College Student Development*, *48*, 674–688. https://doi.org/10.1353/csd.2007.0065

Hawkley, L. C., Burleson, M. H., Bentson, G. G., & Cacioppo, J. T. (2003). Loneliness in everyday life: Cardiovascular activity, psychosocial context, and health behaviors. *Journal of Personality and Social Psychology*, *85*, 105–120. https://doi.org/10.1037/0022-3514.85.1.105

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, *40*, 218–227. https://doi.org/10.1007/s12160-010-9210-8

Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment*, *51*, 69–81.

Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology*, *37*, 751–768. https://doi.org/10.1521/jscp.2018.37.10.751

Keles, B., McCrae, N., & Grealish, A. (2020) A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth*, *25*, 79–93. https://doi.org/10.1080/02673843.2019.1590851

Kim, Y., Sohn, D., & Choi, S. M. (2011). Cultural difference in motivations for using social network sites: A comparative study of American and Korean college students. *Computers in Human Behavior*, *27*, 365–372. https://doi.org/10.1016/j.chb.2010.08.015

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., Shablack, H., Jonides, J., & Ybarra, O. (2013) Facebook use predicts decline in subjective well-being in young adults. *PLoS One*, *8*, 1–7. https://doi.org/10.1371/journal.pone.0069841

Lee, C. Y. S., & Goldstein, S. E. (2015). Loneliness, stress, and social support in young adulthood: Does source of support matter? *Journal of Youth and Adolescence*, *45*, 568– 580. https://doi.org/10.1007/s10964-015-0395-9

Leung, L. (2006). Stressful life events, motives for Internet use, and social support among digital kids. *CyberPsychology & Behavior*, *10*, 204–214. https://doi.org/10.1089/cpb.2006.9967

Lin, S., Liu, D., Niu, G., & Longobardi, C. (2020). Active social network sites use and loneliness: The mediating role of social support and self-esteem. *Current Psychology*, 1–8. https://doi.org/10.1007/s12144-020-00658-8

Luhmann, M., & Hawkley, L. C. (2016). Age differences in loneliness from late adolescence to oldest old age. *Developmental Psychology*, *52*, 943–959. https://doi.org/10.1037/dev0000117

Mellor, D., Stokes, M., Firth, L., Hayashi, Y., & Cummins, R. (2008). Need for belonging, relationship satisfaction, loneliness, and life satisfaction. *Personality and Individual Differences*, *45*, 213–218. https://doi.org/10.1016/j.paid.2008.03.020

Nausheen, B., Gidron, Y., Gregg, A., Tissarchondou, H. S., & Peveler, R. (2007). Loneliness, social support, and cardiovascular reactivity to laboratory stress.

Stress, *10*, 37–44. https://doi.org/101010.1080/10253890601135434.1080/10253890601135434

Ni, S., Yang, R., Zhang, Y., & Dong, R. (2015). Effect of gratitude on loneliness of Chinese college students: Social support as a mediator. *Social Behavior and Personality*, *43*, 559–566. https://doi.org/10.2224/sbp.201543.4.559

Olinsky, A., Chen, S., & Harlow, L. (2003). The comparative efficacy of imputation methods for missing data in structural equation modeling. *European Journal of Operational Research*, *151*, 53–79.

Perrin, A. (2015, October 8). *Social media usage: 2005–2015.* Pew Research Center. https://www.pewresearch.org/internet/2015/10/08/social-networking-usage-2005-2015/

Primack, B. A., Shensa, A., Sidani, J. E., Whaite, E. O., Lin, L. Y., Rosen, D., & Miller, E. (2017). Social media use and perceived social isolation among young adults in the U.S. *American Journal of Preventive Medicine*, *53*, 1–8. https://doi.org/10.1016/j.amepre.2017.01.010

Rokach, A. (2001). Strategies of coping with loneliness throughout the lifespan. *Current Psychology*, *20*, 3–18. https://doi.org/10.1007/s12144-001-1000-9

Segrin, C. (2003). Age moderates the relationship between social support and psychosocial problems. *Human Communication Research*, *29*, 317–342. https://doi.org/10.1111/j.1468-2958.2003.tb00842.x

Segrin, C., & Passalacqua, S. A. (2010). Functions of loneliness, social support, health behaviors, and stress in association with poor health. *Health Communication*, *25*, 312–322. https://doi.org/10.1080/10410231003773334

Snell, D. L., Siegert, R. J., Hay-Smith, E. J. C., & Surgenor, L. J. (2011). Factor structure of the Brief COPE in people with mild traumatic brain injury. *The Journal of Head Trauma Rehabilitation*, *26*(6), 468–477

U.S. Census Bureau. (2019). *Historical living arrangements of adults.* https://www.census.gov/data/tables/time-series/demo/families/adults.html

Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., . . . Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, *144*, 480–488. https://doi.org/10.1037/xge0000057

Wang, J. L., Gaskin, J., Rost, D. H., & Gentile, D. A. (2018). The reciprocal relationship between passive social networking site (SNS) usage and users' subjective well-being. *Social Science Computer Review*, *36*, 511–522. https://doi.org/10.1177/0894439317721981

Wu, C. H., & Yao, G. (2008). Psychometric analysis of the short-form UCLA Loneliness Scale (ULS-8) in Taiwanese undergraduate students. *Personality and Individual Differences*, *44*, 1762–1771.