ADJUSTMENT AND SOCIAL MEDIA USE DURING AND AFTER THE COVID-19 PANDEMIC

by

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ABSTRACT

Adolescents are highly susceptible to developing depression, given the wide range of social and biological changes that happen during this developmental period. Many late adolescents transition to college, and this experience is associated with more responsibility, higher academic demands, and gains in independence from family, which have been associated with higher levels of depression. Most adolescents today use social media, and this has been linked to many positive effects, such as exploring one’s identity and staying in contact with peers. However, social media use also has been associated with negative effects, such as body-image issues and increased depression levels. The unexpected occurrence of the COVID-19 pandemic has also been linked with higher levels of mental distress for late adolescents. The purpose of this study is to investigate the relationship between social media use and depression symptoms in late adolescents during the COVID-19 pandemic and currently. Participants were 208 first-year college students who responded to an online survey assessing their social media use, depressive symptomology, and problematic internet use both during the COVID-19 pandemic and currently. Results indicated that there were no significant correlations between social media use and depression symptoms at either time. Notably, depression symptoms scores were above the clinical cutoff in both time periods and did not differ significantly. Participants reported a significant decrease in problematic internet usage between early in the pandemic and currently. Overall, results suggested that there was significant depressive symptomology during the COVID-19 pandemic that has carried over to the current timeframe. However, as problematic internet use has decreased, it is possible that this might contribute to reduced depression symptoms in adolescents in the future.
DEDICATION

I want to dedicate this project to all the wonderful people who helped me through this process. First, I have to thank my amazing thesis team as they have been a huge support system for me as I went along this journey. They helped me whenever I got stuck or when I lost faith in myself and how this project would turn out. So, to my team, thank you for believing in me.

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INTRODUCTION

Overview

Adolescence is a period in one’s life that is characterized by an increased risk for depression symptoms due to the biological and social changes that happen during this developmental stage. Late adolescents who transition to college are especially susceptible to more depressive symptoms for a wide variety of reasons including being away from home, increased workload, and less sleep. For most adolescents and college students, social media plays a major role in their lives, as they use social media to connect with peers, explore their identity, and form a support group based on similar ideologies. However, the use of social media is also correlated with higher levels of depression, as interactions on social media are associated with body image issues, negative emotional responses to content, and doom scrolling.

The COVID-19 pandemic has presented many new challenges worldwide, creating stressors such as health uncertainty and isolation protocols that heightened levels of depression and anxiety for the general population. An especially susceptible group were adolescents and more specifically late adolescents. Indeed, it was reported that during the peak of the pandemic, depression levels for first-year college students rose to 34% (Cheng et al., 2021). This could have been due to a variety of reasons such as transitioning to an online learning environment, anxieties surrounding the health of family and peers, and feeling socially isolated from peers.

The purpose of the present investigation was to investigate the correlations between depression levels and social media usage of first-year college students during the
height of the COVID-19 pandemic, as well as later in the pandemic, after most restrictions had been lifted. To provide background for this study, research on depression in adolescents will first be reviewed. Then, studies that have examined how social media use is related to both positive and negative outcomes for adolescents will be described. Next, how late adolescents are impacted by depressive symptoms during the college transition will be reviewed. In each of these sections, the ways in which the COVID-19 pandemic has played a role will be considered. Finally, the present investigation will be described, and the hypotheses for this study will be offered.

**Depression and Late Adolescence**

Depression is a mental health disorder that affects all populations regardless of gender, age, socioeconomic status, etc. Depression includes a range of symptoms, such as feelings of sadness and hopelessness, angry outbursts, tiredness, and trouble concentrating (Mayo Clinic, 2022). There is not one exact cause for depression, as a complex combination of biological and social factors can contribute. These include genetic and hormonal issues, low quality peer relationships, substance abuse, lack of social support, and a possibility of family prevalence. Depression can also be triggered by a variety of personal and interpersonal events such as grief, natural disasters, and trauma (NHS, 2019).

A population that is highly susceptible to developing depressive disorders are adolescents, with an estimation of 10-15% of adolescents being affected by depression (Moreh & O’Lawrence, 2016). Adolescents are especially vulnerable to developing depression disorders due to the biological and social changes that come along with the transition towards adulthood. Biologically, adolescents experience a decrease in
dopamine during the early stages of puberty, which makes adolescents more responsive to stress and less responsive to rewards, increasing their risk of developing depression (Auerbach et al., 2014). The structure of one’s brain could also have a potential connection with adolescent depression. For example, it has been observed that adolescents who have major depressive disorder and who have experienced childhood mistreatment have displayed reduced dorsal anterior cingulate cortex (Zajkowska et al., 2021). This means that, similar to the effects associated with the reduction of dopamine, these adolescents have a blunted reaction to positive rewards and emotions.

Various social changes also increase the risk for depression during adolescence. An especially large social risk factor for depression during adolescence is peer victimization, which is also known as bullying. This is when an adolescent is the target of repeated aggressive behaviors within their peer group (Youngblade et al., 2009). A study involving adolescents aged 13 through 19 years observed associations of peer victimization with higher levels depression and suicidality. The most common type of peer victimization was being bullied based on one’s appearance or speech patterns (Klomek et al., 2007). There is also the aspect of family relationships that has been shown to have an association with adolescent depression. For example, a study done by Sheeber and colleagues (1997) found that in their sample of adolescents aged 14 to 20 years, less supportive family structures and higher concentrations of conflict within the home were related to depressive symptomology.

Adolescents may have higher levels of depression based on social comparison as well. The two most common types of comparison are upward comparisons, which is when a person compares themselves to someone superior, and downward comparison,
which is when a person compares themselves to someone inferior. A study done in China with adolescents found that, in an academic setting, upward comparison was positively correlated with levels of depression, whereas downward comparison was negatively correlated with depression levels (Li et al., 2021). This suggests that the more adolescents compare themselves to someone whom they find to be superior to them, the higher their risk of developing depression.

**Gender Differences in Depressive Symptoms**

Findings also indicate that, beginning in adolescence, girls are two to three times more likely than boys to develop depressive disorders (Labaka et al., 2018). This could be due to the societal differences that girls and boys go through during this stage in life and the way they handle the symptoms of depression, with girls being more likely than boys to engage in rumination, the mental recollection of past stressors, which expands depression symptoms (Moreh & O’Lawrence, 2016). Trait rumination has been observed to increase cortisol levels, a hormone released during times of high stress, which may correlate to a higher likelihood of developing depressive symptoms (Goldwin et al., 2012).

During a major depressive episode, girls are more apt to have problems revolving around appetite and fatigue, whereas boys are more likely to have problems relating to aggression and keeping friendships (Van Loo et al., 2017). This is due to the fact that adolescent girls are more likely to internalize their problems, thus resulting in appetite and fatigue issues, whereas boys are more likely to externalize their problems (Bongers et al., 2004).
For female adolescents, depression could also be triggered by the changing levels of estrogen during a girl’s menstrual period, which leads to symptoms such as irritability and fatigue. In addition, the unrealistic beauty standards presented in Western media can make adolescent females more vulnerable to depression (Moreh & O’Lawrence, 2016). For example, a study done in Southern Italy found that adolescent females are more likely to internalize media messages that emphasize the desirability of thinness, thus leading to a dissatisfaction in body image and higher chances of developing depression and eating disorders (Barcaccia et al., 2018).

**Depression During COVID-19**

Even though the COVID-19 virus is still very prevalent in the world, it is important to start to understand the effects the pandemic may be having on people’s mental well-being. For everybody across the globe, the pandemic introduced a wide range of new challenges, such as lockdowns, isolation, and economic instability (APA, 2020). In the United States, the prevalence of depressive symptoms increased from 27.8% in 2020 (during the early months of the pandemic) to 32.8% in 2021 in adults aged 18 years and older (Ettman et al., 2021). This jump in prevalence could be due to a variety of reasons, but in the year 2020, 78% of adults nationwide reported the COVID-19 pandemic to be a significant source of stress (APA, 2020). In Turkey, approximately half of adult study participants showed symptoms of depression and anxiety, which may have stemmed from poor social communication with friends and family and by feeling highly restricted due to COVID-19 (Uysal et al., 2021).

Even though these mental health problems are being seen everywhere, those who were infected with COVID-19 may be more susceptible to depressive disorders than
those who were not infected. A study done in Sweden by Badinlou and colleagues (2022) examined depression, anxiety, and insomnia levels in adults 18 years of age or older who were previously infected with COVID-19. These researchers found that the more severe of an infection a person had, the higher levels of depression, anxiety, and insomnia they experienced.

Notably, adolescents aged 18-25 years were the population with one of the highest prevalence rates of major depressive episode in the year 2020 (NIMH, 2022). Adolescents during the pandemic were faced with a wide variety of challenges that came with it. For example, they were forced to switch from in-person classes to a completely online education experience, faced isolation from friends and family, and were confronted with an uneasy political climate being shown on every platform they inhabited (APA, 2020). It was observed that adolescent girls experienced a significant increase in depression quickly following COVID-19-related shutdowns, whereas adolescent boys showed increases in depression towards the seventh week of lockdown. This was positively correlated with levels of loneliness and time spent doing social activities, with girls spending more time on social activities such as media or video games having higher levels of depression compared to girls with lower levels of participation in these activities (Liu et al., 2022).

As depression levels increased during the lockdowns for COVID-19 and since women are generally about two times as likely to develop these depressive disorders, it is plausible to infer that women suffered from greater levels of depression during the pandemic. A study done in Pakistan saw some of this effect in those who were 18 years or older. In this sample, 58% of women versus 54% of men were found to have a
Hospital Anxiety and Depression Scale depression score above cutoff (Rabbani et al., 2021). They also found that women adopted several more precautionary measures in response to the pandemic than men did, such as washing hands more often, avoiding going out, and wearing masks (Rabbani et al., 2021). This is possibly due to women’s higher anxiety levels when compared to men. A study by Amerio and colleagues (2022) involving undergraduate students in Italy found that more women than men reported negative mental health consequences due to COVID-19. These researchers found that caring for a person at home, living in poor housing conditions, and symptoms of insomnia were all listed as possible reasons for the gap in depression levels between genders (Amerio et al., 2022).

**Social Media Use and Adolescence**

Social media has become one of the largest institutions on the internet, with an average American spending roughly 2 hours and 27 minutes on social media per day (Georgiev, 2022). Notably, the social media institution that we know today is relatively young, only being made popular around 2005. This means that what we know about the mental health impacts of social media is relatively limited, though this area of study continues to expand.

Adolescence is a time in which peer relationships become increasingly important as adolescents are starting to individualize themselves from the family unit. A Pew Research article done in 2018 observed that out of 750 respondents, 45% of 13- to 17-year-olds reported that they are online constantly and that 97% use some form of social media (e.g., YouTube, Instagram). Social media plays a huge role in adolescents and their peers being able to stay in contact with one another.
Social media is also a platform in which adolescents can create their own identity away from the pressures of parents (Mayo Clinic, 2022). With this exploration of identity, social media aids adolescents in finding peers that share similar characteristics, such as similar interests, values, ideologies, and sexual/gender identities (Tartari, 2015).

With this increase in accessible peer relationships, the use of social media may also provide adolescents with a supportive environment that can lead to them becoming more open to discussing their interests and establishing new friendships (Ito et al., 2008). Adolescents tend to use social media as a way to stay in contact with friends and family, but it is also used to share accomplishments. Roughly 49% of adolescents post about their accomplishments on social media, and about two-thirds of adolescents say that using social media makes them feel as though they have a support system behind them (Anderson & Jiang, 2018).

Although involvement with social media can be beneficial, there are indications that social media use may be one of the leading causes of the drop-off in mental well-being of adolescents (Reihm et al., 2019). The increasing amount of time that adolescents are spending on social media could be a factor. For example, one study found that adolescents who spent more time on social media were at an increased risk of depression, self-harm, and self-esteem issues in both males and females (Barthorpe et al., 2020). There is also the possibility that the decrease in mental well-being could be due to adolescents spending more time engaging with their phones rather than with their parents and peers, which can lead to feelings of social isolation and depression (Twenge, 2018).

The way that adolescents are emotionally responding to their time on social media may play a significant role in the increasing levels of depression as well. Adolescents
who had more positive emotional (e.g., reward) responses while using social media had higher predicted levels of depressive symptoms; this could be due to the adolescent relying more on the likes and positive comments they receive through social media more than they do for in-person interactions (Nesi et al., 2021). It is also noted that adolescents with current depressive symptoms reported more frequent negative emotional (e.g., rejection) responses to social media use; this could be because those who are currently experiencing depressive symptoms may be more apt to attend to negative feedback (Nesi et al., 2021).

Since 2019, the percentage of overall users on social media has increased by 30.5%. Also of note, there was a total increase of 26% among those aged 18 to 29 years using social media (Dixon, 2022). This increase can likely be attributed to the isolation that came with the COVID-19 pandemic; people were forced to stay home and transition to online environments to continue working or going to school. Brailovskaia and colleagues (2021) found that younger age, which refers to those who are younger than the median age of 27 years, and domestic quarantine were predictive factors of increased addictive social media use and depression symptoms in German populations.

The term “doom scrolling” became popularized in response to the increased social media usage during the pandemic. Doom scrolling is when someone is spending excessive amounts of time looking at their electronic device, reading negative news stories or articles (Cambridge Press, 2022.). With such open access to news about the pandemic via social media, a study was done with late adolescents (mean age 18 years) showing a possible link between doom scrolling social media usage and an increase in depression levels during the time of COVID-19 (Price et al., 2022). These data are
supported by other studies; for example, Frenn and colleagues (2022) also found that more time spent on social media reading the news was associated with higher levels of depression in Lebanon during the COVID-19 pandemic in a sample of those aged 18 years and older.

**Instagram and Snapchat Use During Adolescence**

Two of the most popular social media platforms used by adolescents are Snapchat and Instagram. Roughly 48% of Snapchat users are comprised of those 15-25 years of age (Statista, 2022), and about 31% of Instagram users are 18-24 years of age (Statista, 2022). A few main reasons why adolescents are using Snapchat and Instagram so much compared to other generations are that their current friends use the apps, they are easy to use, and they are free (Piwek & Joinson, 2016). One study (Musarrat et al., 2022) found that Snapchat users express more digital narcissism, lower self-esteem, and more self-objectification, which are all possible indications of developing depression.

There is not a set definition among researchers on what problematic social media use is, but in this case, it is the potential of negative outcomes triggered by excessive use of social media. Problematic Instagram use also has been associated with poor mental well-being outcomes. Specifically, problematic use of Instagram was correlated with poor body image, which may lead to feelings of depression in adolescents aged 14 to 19 years (Yurdagül, 2019). These effects may have a detrimental impact on the personal, social, or professional lives of the user (NIH, 2017). On Instagram, findings suggest that college students who engage in more upward social comparison feel more depressed than those engaging in downward social comparison (Hwang, 2019). It was also observed that high Instagram/Snapchat use was associated with more delinquent behaviors and school
avoidance. Interestingly, however, it was also found that those in the high
Instagram/Snapchat use group had higher close friendship competence and peer support
compared to a low-social media use group (Vannucci & Ohannessian, 2019).

**Social Media Use and COVID-19**

Evidence is beginning to emerge that there are associations between Instagram
and Snapchat use and depression, but this is a topic that needs further study. For example,
it is important to understand whether the relations between social media use and
depression might have differed early vs. later in the COVID-19 pandemic, once
restrictions were lifted and face-to-face interactions increased. In addition, there is little
research on how the video call features of these applications relate to mental well-being
as compared to in-person interactions. The current study investigated these issues by
examining participants’ reports of social media use during and after the COVID-19
pandemic and their feelings of depression. Of particular interest was adolescents’
satisfaction levels with the different types of interactions they had via social media, in-
person, or video call.

**College Transition and Depression**

In the United States, approximately 62% of high school graduates immediately
enrolled in a college or university following their graduation in 2021 (U.S. Bureau of
Labor Statistics, 2022). The time that late adolescents spend in college can provide many
great opportunities. During their time in college, late adolescents will experience more
academic opportunities in the sense that they have more control over their schedules,
have greater opportunities to be involved in things they are interested in, and are able to
join a variety of clubs. An interesting aspect of the college transition is that those who go through college are significantly more likely to get involved with voting and political engagements, jumping from 62% of people who have a high school diploma voting in national elections to 86% who have a bachelor’s degree (Trostel, 2015). Time in college is also associated with greater autonomy, as late adolescents are no longer living full-time with their parents and are responsible for their day-to-day activities (Dubas & Petersen, 1996).

Despite the positive opportunities associated with the college transition, there are some challenges. During this time, as previously stated, late adolescents now have more responsibilities and those who have a less secure attachment have a harder time self-regulating in response to the new stressors (Ruberman, 2014). There is also a lot of stress placed on late adolescents due to a variety of reasons such as changes in eating and sleeping habits, increases in workload, challenges with time management, and not taking enough breaks for self-care (University of North Carolina).

The college transition is also associated with concerns of depression for late adolescents as it is a time in which they are faced with more stress than they were while in high school (Beiter et al., 2015). In the United States, 10% of all college students have been diagnosed with depression in a 12-month timeframe (Beiter et al., 2015). This could be due to the experiences that late adolescents face during this time of transition such as body-image related issues, academic stressors including test taking volume, and lack of sleep (Beiter et al., 2015).

Prior to the COVID-19 pandemic, the levels of depression for late adolescents were on the rise. For example, there was a 50% prevalence increase of college students
meeting diagnostic criteria for one or more mental health disorders from 2013 to 2021 (Lipson et al., 2022). There has not been one cause pinpointed for this abrupt increase, but it is thought that increases in social media use and poorer quality of sleep could be part of it; there is also the possibility that the I-generation seek out more mental health support than other generations (Duffy et al., 2019).

An important factor that helps to explain the correlation between college transitions and depression rates during late adolescence is the role of family. During this transition from high school to college, the relationship late adolescents have with their parents may also be changing. This could be due to increased time spent with peers and a larger desire for autonomy, which decreases their family cohesion (Shearer et al., 2005). Family cohesion is defined as the emotional bonding of family members (Rivera et al., 2008). A study done by Moreira and Telzer (2015) observed that late adolescents two months into their college transition showed significant increases in depression symptoms, but this effect decreased if the late adolescent reported higher levels of family cohesion. Indeed, those who did not report higher levels of family cohesion were more at risk for developing depressive disorders.

Following the college transition, students may be at a greater risk for maladaptive coping, which increases their vulnerability to depression. If a late adolescent is engaging in higher levels of disengagement coping, coping which focuses more on the negative emotions produced by a stressor, then they are at increased risk for depression symptoms (Lee et al., 2014). Another study was done focusing on similar issues, using a sample of first-year college students. Results indicated that higher levels of stress and the use of avoidant coping strategies were correlated with greater levels of depression, especially if
sustained over the long term (Dyson & Renk, 2006). Late adolescents’ perceptions of emotional malleability may also correlate with levels of depression. For example, Kneeland and Dovidio (2020) found that first-year students who believed that emotions were more malleable at the beginning of their fall semester experienced decreased depressive symptomology at the end of the same semester.

**College Transition and COVID-19**

In the spring of 2020, just as many students may have been getting used to being in college, their first year was disrupted by the pandemic. Overall, college freshmen during the time of COVID-19 experienced additional stress and adjustment difficulties due to the uncertainty of life during the time (Kecojevic et al., 2020). Interestingly, 23% of high-school seniors who had planned to enter college in the fall of 2020 changed their college plans due to the pandemic. When asked about why they made this decision, many of them said that they did not feel safe going far away from their family (Collegedata, 2020).

A study done in Portugal examined hopes and fears of college freshmen during 2020 (Andrade & Fernandes, 2022). These researchers found that students had fears regarding education, as well as health of family members and peers, which again helps to explain why students wanted to stay closer to home during the pandemic. During the peak of the COVID-19 pandemic, it was observed that depression levels rose to 34% among college students worldwide (Chang et al., 2021). While comparing three successive cohorts of first-year undergraduate students (2018-2020) in Canada, King and colleagues (2022) found that positive screenings for depression, anxiety, and insomnia were significantly higher among students who entered college during the pandemic.
Many late adolescents also faced great feelings of social isolation and difficulties associated with online learning, such as becoming less motivated in academics and difficulty talking with faculty (Haikalis et al., 2021). A study done with undergraduate juniors from February-March 2020 found that these students faced greater challenges with academics due to the switch to online classes as well as the loneliness they felt because of being away from campus. Late adolescents who faced greater challenges and more loneliness during this time frame reported higher levels of depression and anxiety (Haikalis et al., 2021). These results are seen in other studies as well. For example, Fruehwirth et al. (2021) found that first-year students who experienced greater difficulties in online learning showed a seven percentage-point increase in moderate-severe depression, and those that felt usually or always socially isolated due to the pandemic experienced a nearly 18 percentage-point increase in moderate to severe depression on the Patient Health Questionnaire. A study done with college freshmen found that COVID-19 academic concerns predicted higher depression levels over time, which could be due to the fact that grades have a higher degree of permanence. This might cause students to stress more over grades than over the social or financial impacts of the pandemic (Monte et al., 2021).

Present Study

Research (e.g., Moreh & O’Lawarence, 2016; Sheeber et al., 1997; Zajkowska et al., 2021) has indicated that depression levels during adolescence rise significantly, and the college transition adds additional risk factors. Late adolescents face an array of different challenges as they traverse into the adult world. For example, they have increased responsibilities, increased workload, and difficulties in maintaining family
cohesion. All of these factors may lead to higher levels of depression for late adolescents. Social media usage may also be contributing to the increasing rates of depression in college students. Social media consumption may lead to body-image issues and more focus on negative feedback from peers, which are risk factors for depressive symptoms. In addition, the COVID-19 pandemic played a large role in the higher depression levels observed worldwide in recent years. Especially for late adolescents, it was observed that during the peak of the pandemic, depression rates for first-year college students rose to 34% (Cheng et al., 2021). During the pandemic most people were isolated, and for many, especially adolescents, social media usage increased significantly as a primary means to stay socially connected with others. Although there were many beneficial outcomes associated with social media use, at the same time individuals were increasingly exposed to risks (e.g., body image concerns, victimization) that may have exacerbated depression symptoms.

Interestingly, it has been observed that with every 10% increase of online social media friends that participants had no real-life interactions with, there was a 9% increase in odds of developing depressive symptoms (Shensa et al., 2018). During the peak of the pandemic, most individuals were forced to spend more time online than they had previously. This increased time online is a possible source of the observed increase in depressive symptoms, given that previous research (Feng et al., 2014) found that the longer a student was staring at a screen, the higher was their risk of anxiety and depression. The pandemic contributed to increases in time spent online, as the average time adults spent online increased from 7.5 hours per day in 2020 to 8.5 hours per day in 2021 (Statista, 2022).
The present study’s purpose was to investigate the correlations between depression levels and social media usage of first-year students, both currently (i.e., later in the pandemic, after most restrictions had been lifted) and during the height of the COVID-19 pandemic, based on these students’ recollections of their thoughts and behaviors during high school. This study specifically focused on the use of the Instagram and Snapchat apps, given that these apps are especially popular among adolescents. As stated previously, depression during the college transition is an extremely important topic to be explored, but the COVID-19 pandemic caused additional challenges that are important to research further. The present study examined how different social media behaviors (e.g., using a video call feature, problematic social media usage of Instagram) may be related to adolescents’ level of depression symptoms, both early in the pandemic, when they were in high school (based on retrospective reports), and later in the pandemic when they were first-year college students. Also of interest was whether there might be gender differences in how social media use is related to depression symptoms.

The present study’s hypotheses are as follows:

1) Participants will report higher depressive symptomology and greater problematic internet use during the COVID-19 pandemic than in the current timeframe.

2) Social media use during the COVID-19 pandemic will be associated with higher levels of depression when compared to social media use currently.

3) Higher levels of problematic internet use will be positively correlated with depression symptoms.

4) Higher rates of use of Instagram and Snapchat will be associated with higher levels of depression symptoms.
5) Greater use of video chat on these social media platforms will be associated with lower levels of depression symptoms.

6) Higher levels of satisfaction with interactions on these social media platforms will be associated with lower levels of depression symptoms.

**METHODOLOGY**

**Participants**

The participants in this study were 208 undergraduate students at the University of Maine. These students were recruited from the subject pool of the Department of Psychology and the Department of Communication and Journalism. Of these 208 people, 139 met the requirement of being a first-year student and were included in the data set. The sample was 61.2% (n=85) male, 34.5% (n=48) female, 2.2% (n=3) non-binary, 1.4% (n=2) other, and 0.7% (n=1) Female-to-Male (FTM) Transgender. In this sample 84.2% (n=117) identified as white, 4.3% (n=6) identified as African American, 3.6% identified as Asian (n=5), 2.9% identified as Native American (n=4), and 5% identified as other (n=7). Participants were awarded one research credit through the online platform SONA upon submission of the questionnaire.

**Measures**

**Demographic Information**

Information on participants’ age, race, gender, ethnicity, high school graduation year, University of Maine class year, and family socio-economic status were self-reported (see Appendix E).
Depression

To measure depression, this study used the Center for Epidemiologic Studies Depression Scale (CESD; Appendices F and G). The CESD was developed in 1977 by researcher Laurie Radloff. This scale has 20 questions (e.g., “I was bothered by things that didn’t usually bother me”) that assess the severity of depression symptoms (Radloff, 1977). Participants rated each item on a 0 (rarely or none of the time) to 3 (most or all of the time) scale depending on how often through the week they had the feeling or behavior described. Two versions of this scale were used, one in which participants described their thoughts and behaviors during the early weeks of the COVID-19 pandemic (when they were in high school), and another in which they responded regarding the present time, after the height of the COVID-19 pandemic.

Social media use

To measure social media usage, I created questions to examine how participants broke up time spent on social media as well as the main features used on social media platforms (see Appendices H and I). Participants answered these questions for both during the COVID-19 pandemic (e.g., “how many hours, on average, would you say you spent on social media in a typical week during the first month of the COVID-19 lockdown?”, “How many hours did you spend in a typical week during the first month of the COVID-19 lockdown on Snapchat?”) and currently (e.g., “How many hours, on average, would you say you spent in a typical week of the past month on social media?”, “How many hours did you spend, in a typical week of the past month on Snapchat?”).

Disordered social media use
To measure disordered social media use during and after the COVID-19 pandemic, this study used the Social Media Use Disorder Scale (see Appendices J and K). This is a 9-item scale which was created in 2016 based on the DSM-5 characteristics of Gaming Disorders and was curated for examining disordered behaviors regarding social media use (Van den Eijden, 2016). In this study, each statement was rated by participants based on a disagree-agree scale with a range of 1 (strongly disagree) to 6 (strongly agree). The answer scaled was modified from the yes/no scale used in the original scale to allow for more variability in participants’ responses. Two versions of this survey were used, one in which participants described their level of disordered social media use during the early weeks of the COVID-19 pandemic, and another in which they described their level of disordered social media use in the present time, after the height of the COVID-19 pandemic.

Procedure

Participants were recruited using the University of Maine’s research platform, SONA. If interested in participating in the study, they clicked a link to access study materials in Qualtrics. They were first presented with the consent form (see Appendix D). If they chose to participate, they then responded to a set of questionnaires. All participants were first presented with the Demographic Questionnaire. The second block of questionnaires was randomized, with half the participants being asked to respond to a block of questionnaires assessing their depressive symptoms (see Appendices F and G), social media use (see Appendices H and I), and problematic internet use (see Appendices J and K) with the instructions “Think back to the moment you were told that school would be closing until further notice due to COVID-19 (around March 2020). Below is a
list of ways you might have felt or behaved. Please select the number that indicates how often you felt this way during the first weeks following that initial COVID-19 lockdown.” The other half of the participants were asked to respond to these questionnaires with the instructions “Below is a list of ways you might have felt or behaved recently. Please select the number that indicates how often you have felt this way during the past week.”

After responding to the second block of questionnaires, participants were asked to engage in a neutral activity that involved the participant describing a typical classroom in as much detail as possible for a duration of 5 minutes (see Appendix L). The purpose of this activity was to serve as a distractor to reduce the likelihood that participants’ responses to the block of survey about past (or present) behaviors and emotions would impact their responses to the subsequent block of survey questions about present (or past) behaviors and emotions.

Finally, participants were asked to respond to the questionnaires assessing depressive symptoms, social media use, and problematic internet use again, but the second time they were instructed to respond based on a different time period. For example, if participants were first asked to respond regarding how they felt and behaved at the beginning of the pandemic, in their third block of questionnaires they were asked to respond regarding how they felt or behaved recently.

RESULTS

The current study was primarily interested in investigating relations between depression symptoms and various aspects of social media use during the COVID-19
pandemic and currently. Paired t-tests were used in order to analyze possible differences between variables during the COVID-19 pandemic and currently, and correlations among the variables during these two time points were also examined.

It was hypothesized that participants would report higher levels of depressive symptomology and problematic internet use earlier in the COVID-19 pandemic than in the current timeframe. As seen in Table 1 (Appendix N), depression symptomology was not significantly different between the two time periods (all \( p \)'s > 0.05). Though, it is important to note that both means (during COVID-19: 19.3 and current: 17.5) are above the CESD clinical cutoff point, with 16 or greater being indicative of significant or mild depressive symptomology.

Also analyzed were potential situational factors that could have been related to depressive symptomology. Problematic internet use was one of these factors and, as seen in Table 1, problematic internet use during the COVID-19 pandemic was significantly higher than it was currently (\( p < 0.05 \)). Another factor that was statistically significant was in-person satisfaction levels, with satisfaction levels with interacting with others in person early in the COVID-19 pandemic being significantly lower than they were rated in current times (\( p < 0.001 \)). Social media and face-to-face via video call satisfaction were not statistically significant between the time points.

Due to the current study being interested in depression, gender is an important factor to consider. As seen in Table 2 (Appendix O), the mean depression scores for males and females were not significantly different, either during the COVID-19 pandemic or currently. Notably, mean scores for both males and females during COVID-19 were above the clinical cutoff point of 16 points.
Interestingly, depressive symptomology did not decrease significantly between the height of the COVID-19 pandemic and currently for either males or females, though there was somewhat more of a decrease for females, whose average currently (15.1) was just below the clinical cutoff. Those who are transgender are seen to have especially high CESD scores but due to the small number of participants in those categories, they will not be of focus in the current study.

The analyses for the remaining hypotheses of the current study are as follows:

2) Social media use during the COVID-19 pandemic will be associated with higher levels of depression when compared to social media use currently.

A correlational analysis was run to test the correlation between general social media use and depressive symptomology. It was found that there were no significant correlations between general social media use and depressive symptomology for both during the COVID-19 pandemic ($r = -0.032, p > 0.05$) and currently ($r = 0.150, p > 0.05$).

3) Higher levels of problematic internet use will be positively correlated with depression symptoms.

Correlational analyses indicated that problematic internet use and depressive symptomology, during the COVID-19 pandemic and currently, were not significantly associated. When analyses were conducted, it was found that Problematic Internet Use and the CESD were not significantly correlated for either during the COVID-19 pandemic ($r = 0.069, p > 0.05$) or currently ($r = 0.121, p > 0.05$).
4) Higher rates of use of Instagram and Snapchat will be associated with higher levels of depression symptoms.

As mentioned previously, the current study was primarily interested in the social media apps Instagram and Snapchat. Correlational analyses were conducted, and it was found that there was no significant relation between Instagram and Snapchat use and depressive symptomology. This was true for both during the COVID-19 pandemic (Instagram; $r = 0.05, p > 0.05$; Snapchat; $r = 0.022, p > 0.05$) and currently (Instagram; $r = -0.110, p > 0.05$; Snapchat; $r = 0.011, p > 0.05$).

5) Greater use of video chat on these social media platforms will be associated with lower levels of depression symptoms.

Correlational analyses indicated that the use of video chatting on the social media platforms Instagram and Snapchat was not significantly related to depressive symptomatology for either during the COVID-19 (Instagram; $r = -0.001, p > 0.05$; Snapchat; $r = 0.099, p > 0.05$) pandemic or currently (Instagram; $r = -0.003, p > 0.05$; Snapchat; $r = 0.097, p > 0.05$).

6) Higher levels of satisfaction with interactions on these social media platforms will be associated with lower levels of depression symptoms.

Correlational analyses were run regarding the satisfaction levels with interactions on social media platforms and depressive symptomology. It was found that satisfaction levels with social media interactions were not significantly correlated with depressive symptomology for either during
the COVID-19 pandemic ($r = 0.022, p > 0.05$) or currently ($r = 0.011, p > 0.05$).

**DISCUSSION**

Adolescence is a time in a person’s life that is focused on self-discovery, autonomy, and biological development (Auerbach et al, 2014; Youngblade, 2009; Zakikowska, 2021). Due to these various biological and social changes, it is also a time during which young people are highly susceptible to the development of depression, with an estimated 10-15% of adolescents being diagnosed with depression (Moreh & O’Lawerence, 2016). This trend also continues into late adolescence, which is the term used in this study to refer to first-year college students. This time is often characterized by one becoming more independent and taking on more responsibility. This independence can come from moving away, going to college, or financial independence, all of which are experiences that push late adolescents to learn how to think and act for themselves. This increase in independence and responsibility is what may be making the transition towards adulthood so difficult and why depression levels may increase in this time period as well.

Social media is another important factor to consider with adolescents as it has solidified its place in the lives of adolescents as being one of the primary ways of contact with peers. Social media can provide a safe space for many adolescents who are trying to make new friends that share similar ideologies and experiences while allowing them to explore their own identities. Even though involvement in social media provides many positive attributes into the lives of adolescents, there are also some aspects of social
media use that are negative. For example, social media usage has been associated with higher levels of body-image issues, depression, and low self-esteem (Barthorpe et al., 2020; Nesi et al., 2021; Twenge, 2018).

The COVID-19 pandemic is a world-wide issue that has begun to stir up questions about people’s mental health. When the world went into a state of lockdown in early 2020, people were left alone, scared, and confused about the state of things. During this period, as expected, usage of social media increased as people were trying to stay in contact with one another. Taking this into consideration, it is possible that depression symptoms could also have increased during this time as it has been observed in other studies that social media is a potential risk factor for depression (Brailovskaia et al., 2021; Frenn et al., 2022). This is why the current study was interested in investigating the potential correlation between social media use and depressive symptomology during the COVID-19 pandemic, as well as examining what those relations are like currently (several years after the height of the pandemic). Of note, participants reported on their experiences during the early time of the COVID-19 pandemic retrospectively, thinking back to when they were in high school. Consequently, the results should be interpreted with caution, given that participants’ current feelings might have impacted their evaluations of their social media-related behaviors and their feeling of depression during the beginning of the COVID-19 pandemic.

Differences Between Time Frames for Depression and Social Media Use

Counter to the current study’s hypothesis that participants would report higher depressive symptomology early in the COVID-19 pandemic than in the current timeframe, there were no differences. This lack of difference could be due to the fact that
people are still recovering from pandemic and struggling as they work to re-engage in
face-to-face interactions. Another important factor to consider is the fact that the sample
used in the current study are first-year college students, and as stated previously, the
transition to college is a time in which individuals are heavily susceptible to developing
symptoms of depression. This could also impact participants’ memories. If they are
feeling depressed in the current time frame, then it is reasonable to assume that there
could be some emotional leakage when thinking about the past few years. An interesting
observation to note is the fact that mean depression scores were somewhat lower
currently than they were during the COVID-19 pandemic, though this difference was not
statistically significant. The great variability in participants’ CESD scores likely played a
part as to why these mean differences across time periods were not statistically
significant.

Interestingly, as hypothesized, problematic internet usage was found to have
significantly decreased from early in the COVID-19 pandemic to currently. There could
be many reasons as to why this has happened, but a big reason could be the fact that
lockdowns have lifted. Since people are able to see each other in-person again, social
media usage has decreased significantly, as would be expected. Another reason could be
the fact that more and more people are taking breaks from social media use. Now that the
negative effects of social media use are well-known to most people, a lot of the younger
generations are taking it upon themselves to maintain their mental health and take breaks
from social media applications whenever they feel things are getting too heavy.

Depression and Social Media Use
Another hypothesis of the current study was that social media use would be more strongly associated with depression symptoms during the COVID-19 pandemic than currently. However, these correlations were not significant for either time period. These results are not consistent with previous research (Barthorpe et al., 2020; Nesi et al., 2021; Twenge, 2018). There are several possible explanations for why social media was not associated with depressive symptoms. One possibility is that social media use during the COVID-19 pandemic was a good thing for most people as it was the main form of communication with family and peers. Social media use was also one of the top ways that younger generations, such as the participants in the current study, would have stayed informed about the constant changing impacts of the COVID-19 pandemic. Both of the explanations provided would make it so that social media use would actually work as a protective factor against depressive symptomology. It could also be that people are not accurately recalling the full extent of their mental health status when it came to using social media, since almost three years have passed since the height of the pandemic.

In the current timeframe, people may not be using social media as much as they were during the pandemic since they have been able to return to more in person interactions. This would help to explain the significant decrease in problematic internet use found in the present study, as well as for the slight, but not significant, decrease in depressive symptomology between the COVID-19 pandemic and currently. If people are not using social media as heavily anymore, then their risk for developing depression would decrease, which could be why there was not a significant association between social media and the depressive symptomology currently. It could also be due to the fact that people are interacting more in-person due to the lockdowns being lifted, and this type
of interaction has been known to be a protective factor against the development of depression.

**Depression and Problematic Internet Use**

In the current study it was hypothesized that higher problematic internet use would correlate with higher depressive symptomology, regardless of time. However, these variables were not significantly correlated in the present study, either during the COVID-19 pandemic or currently. Though these findings are not consistent with the current literature on the topic (NIH, 2017; Yurdagül, 2019), it should be noted that the variability in CESD scores was very high for both time points. With this variability, it is hard to tell exactly if the scores are an accurate representation of the association between depression and problematic internet use. This variability could be due to a misrepresentation of memories attached to the COVID-19 pandemic or due to late adolescents struggling with depressive symptomatology during their transition to college.

For the COVID-19 pandemic, another explanation could be that even though problematic internet usage scores were elevated, social media could have provided protection from depressive symptoms. Previous research (Mayo Clinic, 2022; Ito et al., 2008; Tartari, 2015) has shown that social media provides the opportunity for a great deal of communication between peers, especially for late adolescents. With this in mind, it could be that having higher levels of social media usage in order to contact family and friends provided a relief from potential feelings of loneliness due to lockdowns and quarantining. Being able to stay in contact may also have provided relief from potential anxieties surrounding the health conditions of family and friends, as research has shown
that this was one of the top anxieties surrounding the COVID-19 pandemic for late adolescents (Collegedata, 2020; Kecojevic et al., 2020).

For the current time period, results indicated that problematic internet usage has significantly decreased from the COVID-19 pandemic, which is not consistent with the expectation that as problematic internet use went down so would depression. This could be due to the way in which participants engaged with social media. Previous studies (Nesi et al, 2021) have addressed the problem that engaging with social media in a negative way (e.g., comparing amount of likes to a post to in-person likeability) could be a potential risk factor for developing depression.

**Depression and Instagram and Snapchat Use**

Due to the lack of research regarding the use of Instagram and Snapchat and how it could relate to depression for adolescents, the current study hypothesized that more use of these apps would correlate with higher CESD scores. Again, when a correlational analysis was run, it was found that associations between use of these apps and depression symptoms were not significant either during the COVID-19 pandemic or currently. For similar reasons as stated above, these social media apps could have acted as an influential way for adolescents to stay connected with community during stressful times, such as the COVID-19 pandemic. This could be especially true since Instagram and Snapchat are two of the topmost used programs by the population of interest in the current study (Statista, 2022). Being able to access information that peers may have been posted could have acted as a way to relieve anxieties and stress surrounding the pandemic. Due to the increase of social media use during the pandemic, it could be that people made more friends online, which they kept in contact within the current timeframe. Another
interesting explanation could be that since data were collected in early February, late adolescents were held up inside during the winter meaning they could have had more time on social media which provided a way for them to stay connected to community events.

Depression and Video Chatting

An aspect of life that was heavily prevalent during the COVID-19 pandemic was interacting with family and friends via video call. There is also a lack of research regarding the relations between video calling and depressive symptomology. It was hypothesized in the current study that video chatting would correlate with lower CESD scores. However, when correlational analyses were run for both Instagram and Snapchat, it was found that the relations between these two variables were not statistically significant either during the COVID-19 pandemic or currently.

This was an interesting result, and it is believed that the fact the current study had a higher prevalence of males in the sample could be an explanation. As stated previously, males do not typically interact with social media in the same ways in which females do. Instead, males are more prone to playing video games in order to interact with peers rather than spending time video calling on social media apps such as Instagram and Snapchat. Thus, it would be reasonable to assume that since males are less likely to use these apps to stay in contact with peers, there may be a lower likelihood that their use would be linked to depression. With there being a difference of 25-percentage points between the number of males (56%) and females (31%) in the present study, perhaps the number of male participants reduced the likelihood of there being a significant association between these two variables.
Depression and Satisfaction with Social Media

An additional hypothesis of the current study was that higher levels of satisfaction on social media would correlate with lower levels of depressive symptomology. However, there was no evidence to support this prediction either during the COVID-19 pandemic or currently. Interestingly, the mean levels of satisfaction are slightly higher for the current timeframe when compared to the pandemic. Perhaps people are more satisfied with social media use currently because the information being spread on social media apps is less concerned with the state of the world and the pandemic currently, which makes current interactions more pleasurable. Another explanation could be due to the fact that people are currently using social media less. Since people are not on social media on a more constant basis anymore, this could increase the levels of satisfaction whenever they are able to use the apps. Again, the high degree of variability in the CESD scores may have played a role in impacting the lack of statistical significance in the relation between the levels of satisfaction with social media and depression symptoms.

LIMITATIONS AND FUTURE STUDIES

The current study has four main limitations. First, as previously described, some of the data collected for this study (i.e., behaviors and emotions early in the COVID-19 pandemic) are based on retrospective reports. With this in mind, the results should be interpreted carefully as there may have been retrospective biases from participants when answering questions regarding their functioning during the COVID-19 pandemic. Although some students may think back to early in the pandemic and remember things as
much worse than they were, others may reflect back and recall things as not being as
difficult as perhaps they were.

Second, many retrospective studies recruit participants by convenience sampling,
and the present study was no different. Convenience sampling is a non-probability type of
sampling in which the researcher uses a sample pool that is easy to access, which in this
case, the current study used a sample of UMaine first-year students. The findings
represent students (primarily white) at one public university in the Northeast, and results
cannot be generalized.

There is a third limitation based on the fact that the sample used in the current
study included only first-year college students. Due to the college transition being a time
in which students are more susceptible to developing depression symptoms, this could
have produced an emotional misclassification bias. Students who are suffering from
depressive symptomology currently could have reported worse symptoms during the
COVID-19 pandemic due to their current mental state. Thus, it may not be truly
representative of the general population’s attitudes towards how they felt during the
COVID-19 pandemic or currently.

Lastly, there was a gender imbalance in the sample, with significantly more male
than female participants. Because males generally use social media less than females
(Anderson, 2015) and males have lower rates of depression than females (Labaka et al.,
2018), this could have reduced the likelihood of finding the expected relations between
various aspects of social media use and depressive symptoms. Thus, interpretation of the
results of the current study should be made with caution.
These limitations suggest important directions for future research. Since the present study did not extensively investigate potential differences in correlational patterns in social media use and depression as a function of gender, this could be a direction for future studies that include larger sample sizes. Another direction for future studies could be looking at the ways in which people interacted with social media and how these differences might be associated with depression symptoms. Of interest would be whether adolescents interacted in a more positive way by keeping a distance between themselves and like counts or if they interacted in more negative ways by placing their self-worth in the amount of likes a post gets. It would also be interesting to see a similar study done with a younger age group, such as adolescents in middle school, as this is around the time in which they begin their descent into the world of social media.

CONCLUSION

A key finding of the current study was that depression symptoms both during the COVID-19 pandemic and currently were above the CESD clinical cutoff of 16, meaning that within the sample many were experiencing mild or significant depressive symptomology. This could suggest that the elevated vulnerability to depression that began early in the pandemic is persisting several years later. Therefore, more research regarding causes and treatment options for depression in late adolescence is needed.

Results of the current study revealed that Problematic Internet Use has significantly decreased compared to early in the COVID-19 pandemic. This may be due to the fact that people are now able to have more in-person interactions, and they simply don’t use social media as much anymore. As social media use declines, this might
contribute to less depressive symptomology in the future. Counter to hypotheses, no significant correlations between social media use (general or on Snapchat and Instagram) and depression symptoms were found. The lack of associations between these constructs may be due to the high level of variability in CESD scores in the current study or to the higher portion of males that participated in the study.

The overall implication of the current study’s findings is that social media use may come with risks for depression, but it can also be protective, especially in times (i.e., the unprecedented circumstances associated with the COVID-19 pandemic) when face-to-face interactions are restricted.
REFERENCES


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https://doi.org/10.1080%2F07448481.2021.1942009

https://doi.org/10.1080/07448481.2022.2032085


APPENDIX A: IRB APPROVAL

MEMORANDUM

**STATUS OF PI: FACULTY/STAFF/GRADUATE/UNDERGRADUATE (F,S,G,U)**

If PI is a student, is this research to be performed:
- [x] for an honors thesis/senior thesis/capstone
- [ ] for a master’s thesis?
- [ ] for a doctoral dissertation?
- [ ] for a course project?
- [ ] other (specify)

Submitting the application indicates the principal investigator’s agreement to abide by the responsibilities outlined in Section 1.E. of the Policies and Procedures for the Protection of Human Subjects.

Faculty Sponsors are responsible for oversight of research conducted by their students. The Faculty Sponsor ensures that he/she has read the application and that the conduct of such research will be in accordance with the University of Maine’s Policies and Procedures for the Protection of Human Subjects of Research. **REMEMBER:** if the principal investigator is an undergraduate student, the Faculty Sponsor MUST submit the application to the IRB.

Email this cover page and complete application to mrkr@maine.edu.

**FOR IRB USE ONLY**

Application # 2022-12-17

Review (F/S): F. Expedited Category: LL3g

**ACTION TAKEN:**
- [x] Judged Exempt; category: Modifications required?
- [x] Accepted (date)
- [x] Approved as submitted. Date of next review: 5/1/2023
- [x] Degree of Risk: Minimal
- [ ] Modifications accepted (date): 1/12/2023
- [ ] Not approved (see attached statement)
- [ ] Judged not research with human subjects

**FINAL APPROVAL TO BEGIN** 6/12/2023

Date 5/12/2023
APPENDIX B: SONA RECRUITMENT

This study is titled “Social media use and adjustment during and after COVID-19.”

The purpose of this study is to learn about the relations between social media use and mental health, both early and later in the COVID-19 pandemic. You must be between the ages of 18-21 and a first-year student at the University of Maine to participate in this study.

This study involves responding to anonymous online questionnaires on mental well-being and social media use during and after COVID-19. This is expected to take up to 60 minutes and you will be awarded 1 research credit.
APPENDIX C: INFORMED CONSENT

You are being asked to participate in a University of Maine research project. The study is being conducted by Alexis Banner, an undergraduate student in the Department of Psychology and the Honors College, and Dr. Cynthia Erdley, a Professor in the Department of Psychology. The purpose of this study is to learn about the relations between social media experiences and mental health. You must be at least 18 years of age and a first-year student at the University of Maine to participate in this study.

What will you be asked to do?

This study consists of an online session that may take up to 60 minutes.

- You will be asked to respond to a series of questionnaires
  - You will be asked for demographic information about yourself (e.g., age, race, gender, socioeconomic status).
  - You will be asked to answer questions about your mood (e.g., I felt lonely) both early in the pandemic (March 2020) and currently.
  - You will be asked about your social media experience and use both early in the pandemic (March 2020) and currently.
Risks

Some questions may make you feel uncomfortable or distressed. You may skip any question that you do not wish to answer and can elect to end your participation in the study at any time. Everyone will be provided with a list of mental health resources and are encouraged to pursue these options if they are feeling distressed.

Benefits

There are no direct benefits to you from participating in this study. This research will inform our understanding of the relation of COVID-19 social media use to mental health outcomes. This knowledge could help psychologists design more effective intervention programs for individuals who have mental health difficulties related to their experiences during the COVID-19 pandemic.

Compensation

You will receive 1 Sona Credit for participating in this study.

Confidentiality

This study is anonymous. Please do not write your name on the survey. There will be no records linking you to the data. Data will be kept on a password-protected computer indefinitely. Information for the Sona credit is not connected to your survey responses.

Voluntary
Your participation in this study is voluntary. You may choose to withdraw from this study at any point and skip any questions that you do not want to answer and still receive credit.

**Contact Information**

If you have any questions about this study, please email me at alexis.banner@maine.edu. You may also email the faculty sponsor on this study, Dr. Cynthia Erdley at erdley@maine.edu. If you have any questions about your right as a research participant, please contact the Office of Research Compliance, University of Maine, 207/581-2657 (or email umric@maine.edu).

By clicking on “Yes; I consent” you indicate that you have read and understood the information above and consent to participate in this study

__Yes; I consent to participate

__No; I do not consent to participate
APPENDIX D: DEMOGRAPHICS AND BASIC INFORMATION

1. Age (in years)

2. What is your high school graduation year?

3. What year are you at UMaine?

   ___First year

   ___Sophomore

   ___Junior

   ___Senior

   ___Other

4. Are you a first-generation college student?

   ___ Yes

   ___ No

5. What is your gender identity?

   ___ Female

   ___ Male

   ___ Female-to-male (FTM) Transgender

   ___ Male-to-female (MTF) Transgender

   ___ Non-binary

   ___ Other (please specify)

6. What is your ethnicity?

   ___ Hispanic/Latino
___ Not Hispanic/Latino

7. What is your race?
    ___ African American
    ___ White
    ___ Asian
    ___ American Indian
    ___ Native Hawaiian or Pacific Islander
    ___ Other (please specify)

8. Think of this slider as representing where people stand in the United States. On the TOP of the scale (10) are people who are the best off – those with the most money, education, and most respected jobs. At the BOTTOM (1) are the people who are the worst off – those with the least money, education, and least respected of jobs or no job.

Where would you place your family as you were growing up on this scale?

Select the number that represents your family.

○1   ○2   ○3   ○4   ○5   ○6   ○7   ○8   ○9   ○10
APPENDIX E: CESD DURING COVID-19

Think back to the moment you were told that school would be closing until further notice due to COVID-19 (around March 2020). Below is a list of ways that you might have felt or behaved.

Please select the number that indicates how often you have felt this way during the first weeks following that initial COVID-19 lockdown.

1. I was bothered by things that didn’t usually bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family and friends.
4. I felt I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
15. People were unfriendly.
16. I enjoyed life.

17. I had crying spells.

18. I felt sad.

19. I felt that people disliked me.

20. I could not get “going”.

The above items will be scaled:

○ Rarely or none of the time (less than 1 day per week)

○ Some or a little of the time (1-2 days per week)

○ Occasionally or a moderate amount of time (3-4 days per week)

○ Most or all of the time (5-7 days per week)
APPENDIX F: CESD NOW

Below is a list of ways you might have felt or behaved recently. Please select the number that indicates how often you have felt this way during the past week.

1. I was bothered by things that didn’t usually bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family and friends.
4. I felt I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
15. People were unfriendly.
16. I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.

20. I could not get “going”.

The above items will be scaled:

○ Rarely or none of the time (less than 1 day)

○ Some or a little of the time (1-2 days)

○ Occasionally or a moderate amount of time (3-4 days)

○ Most or all of the time (5-7 days)
APPENDIX G: SOCIAL MEDIA QUESTIONS DURING COVID-19

Think back to the moment you were told that school would be closing until further notice due to COVID-19 (around March 2020).

Please answer the following questions by thinking of your experience using social media (e.g., Snapchat, Instagram, Twitter, Facebook) during the first month following that initial COVID-19 lockdown.

1) How many hours, on average, would you say you spent on social media in a typical week during the first month of the COVID-19 lockdown?

○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

2) How many hours did you spend in a typical week during the first month of the COVID-19 lockdown on Instagram?

○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

3) How many hours did you spend posting in a typical week during the first month of the COVID-19 lockdown on Instagram?

○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

4) How many hours did you spend direct messaging friends on Instagram?

○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

5) How many hours did you spend video calling friends on Instagram?

○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+
6) How many hours did you spend in a typical week during the first month of the COVID-19 lockdown on Snapchat?

○ 0-5 ○ 6-10 ○ 11-15 ○ 16-20 ○ 21-25 ○ 26-30 ○ 31-35 ○ 36+

7) How many hours did you spend posting on Snapchat?

○ 0-5 ○ 6-10 ○ 11-15 ○ 16-20 ○ 21-25 ○ 26-30 ○ 31-35 ○ 36+

8) How many hours did you spend direct messaging friends on Snapchat?

○ 0-5 ○ 6-10 ○ 11-15 ○ 16-20 ○ 21-25 ○ 26-30 ○ 31-35 ○ 36+

9) How many hours did you spend video calling friends on Snapchat?

○ 0-5 ○ 6-10 ○ 11-15 ○ 16-20 ○ 21-25 ○ 26-30 ○ 31-35 ○ 36+

10) During the first month of the COVID-19 lockdown, what percentage of your social interaction time was spent on (1) social media vs (2) face to face via video call vs (3) in-person interactions? **Your total should not exceed 100%**

11) By using the scale please indicate:

   a. How satisfied were you with having social media interactions?

   ○ Extremely satisfied ○ Somewhat satisfied ○ Neither satisfied nor unsatisfied

   ○ Somewhat unsatisfied ○ Extremely unsatisfied

   b. How satisfied were you with face-to-face video call interactions?

   ○ Extremely satisfied ○ Somewhat satisfied ○ Neither satisfied nor unsatisfied

   ○ Somewhat unsatisfied ○ Extremely unsatisfied

   c. How satisfied were you with in-person interactions?

   ○ Extremely satisfied ○ Somewhat satisfied ○ Neither satisfied nor unsatisfied

   ○ Somewhat unsatisfied ○ Extremely unsatisfied
APPENDIX H: SOCIAL MEDIA QUESTIONS NOW

Please answer the following questions by thinking of your experience using social media (e.g., Snapchat, Instagram, Twitter, Facebook) in the past month.

1) How many hours, on average, would you say you spent in a typical week of the past month on social media?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

2) How many hours did you spend, in a typical week of the past month, on Instagram?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

3) How many hours did you spend posting in a typical week of the past month on Instagram?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

4) How many hours did you spend direct messaging friends on Instagram?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

5) How many hours did you spend video calling friends on Instagram?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

6) How many hours did you spend, in a typical week of the past month on Snapchat?
   ○ 0-5 ○6-10 ○11-15 ○16-20 ○21-25 ○26-30 ○31-35 ○36+

7) How many hours did you spend posting on Snapchat?
8) How many hours did you spend, in a typical week of the past month, direct messaging friends on Snapchat?

9) How many hours did you spend video calling friends on Snapchat?

10) In the past month, what percentage of your social interaction time was spent on

   (1) social media vs (2) face to face via video call vs (3) in-person interactions?

   Your total should not exceed 100%

11) By using the scale please indicate:

   a. How satisfied were you with only having social media interactions?

   b. How satisfied were you with face-to-face video call interactions?

   c. How satisfied were you with in-person interactions?

   ○ Extremely satisfied ○ Somewhat satisfied ○ Neither satisfied nor unsatisfied

   ○ Somewhat unsatisfied ○ Extremely unsatisfied
APPENDIX I: PROBLEMATIC INTERNET USE QUESTIONS DURING COVID-19

Think back to the moment you were told that school would be closing until further notice due to COVID-19 (around March 2020).

Please respond to the following statements by thinking of your experience using social media (e.g., Snapchat, Instagram, Twitter, Facebook) during the first month following that initial COVID-19 lockdown.

1. Regularly found that you couldn’t think of anything else but the moment you would be able to use social media again.

2. Regularly felt dissatisfied because you wanted to spend more time on social media.

3. Often felt bad when you could not use social media.

4. Tried to spend less time on social media but failed.

5. Regularly neglected other activities (e.g., hobbies, sports, homework) because you wanted to use social media.

6. Regularly had arguments with others because of your social media use.

7. Regularly lied to your parents or friends about the amount of time you spend on social media.

8. Often used social media to escape from negative feelings.

9. Had serious conflict with parents, siblings, or friends because of your social media use.
The above items will be scaled:

○ Strongly disagree

○ Disagree

○ Slightly disagree

○ Slightly agree

○ Agree

○ Strongly agree
APPENDIX J: PROBLEMATIC INTERNET USE QUESTIONS NOW

Please answer the following questions by thinking of your experience using social media (e.g., Snapchat, Instagram, Twitter, Facebook) in the past month.

1. Regularly found that you couldn’t think of anything else but the moment you would be able to use social media again.
2. Regularly felt dissatisfied because you wanted to spend more time on social media.
3. Often felt bad when you could not use social media.
4. Tried to spend less time on social media but failed.
5. Regularly neglected other activities (e.g., hobbies, sports, homework) because you wanted to use social media.
6. Regularly had arguments with others because of your social media use.
7. Regularly lied to your parents or friends about the amount of time you spend on social media.
8. Often used social media to escape from negative feelings.
9. Had serious conflict with parents, siblings, or friends because of your social media use.

The above items will be scaled:

○ Strongly disagree

○ Disagree

○ Slightly disagree
○ Slightly agree

○ Agree

○ Strongly agree
APPENDIX K: NEUTRAL STIMULUS INSTRUCTIONS

Think about the setting of a typical classroom. Please write a description of what it looks like in the box below (e.g., how are the chairs are set up, is there a whiteboard, where is the teacher’s desk), in as much detail as possible, until the timer of 5 minutes is done.
# APPENDIX L: MENTAL HEALTH SERVICES

## Counseling Services

<table>
<thead>
<tr>
<th>ON-CAMPUS RESOURCES</th>
<th>Available for UMaine Faculty, Staff, and Students</th>
</tr>
</thead>
</table>
| **Counseling Center** | 207-581-1392  
Cutler Health Building (Gannet Hall side)  
(FREE to UMaine students)  
[http://www.umaine.edu/counseling/](http://www.umaine.edu/counseling/)  
Weekdays 8:00 am-4:30 pm  
After business hours, call UMaine Police, 581-4040 or 911 |
| **Psychological Services Center** | 207-581-2034  
330 Corbett Hall  
(Sliding fee scale; costs are your responsibility)  
[https://umaine.edu/psychology/psychological-services-center/](https://umaine.edu/psychology/psychological-services-center/)  
Weekdays 8:00 am – 4:30 pm |

### COMMUNITY RESOURCES

Available to Anyone

| **Community Health & Counseling Services** | 207-947-0366  
42 Cedar Street  
Bangor, ME  04401  
[http://www.chcs-me.org/](http://www.chcs-me.org/)  
Weekdays 8:00 am-5:00 pm |
| **Maine Crisis Hotline** | 1-888-568-1112  
[https://heretohelpmaine.com/](https://heretohelpmaine.com/)  
7 days/week 24 hours |
| **Psychological Services Center** | 207-581-2034  
330 Corbett Hall  
(Sliding fee scale; costs are your responsibility)  
[https://umaine.edu/psychology/psychological-services-center/](https://umaine.edu/psychology/psychological-services-center/)  
Weekdays 8:00 am – 4:30 pm |
| **Contact Your Primary Care Provider** | (Any costs are your responsibility) |

### NATIONAL RESOURCES

| **Behavioral Health Services Locator** |  
[https://findtreatment.samhsa.gov/](https://findtreatment.samhsa.gov/) |
| **National Suicide Prevention Lifeline** | Toll-Free, 24-hour Hotline, 1-800-273-TALK (1-800-273-8255) |
### APPENDIX M: TABLE 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>COVID-19</th>
<th>Current</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>19.3(12.5)</td>
<td>17.5(11.2)</td>
<td>0.139</td>
</tr>
<tr>
<td>Problematic Internet Use</td>
<td>20.3(9.64)</td>
<td>17.5(7.71)</td>
<td>0.002**</td>
</tr>
<tr>
<td>In-person satisfaction</td>
<td>3.57(1.31)</td>
<td>4.05(1.02)</td>
<td>&lt; 0.001***</td>
</tr>
<tr>
<td>Social media satisfaction</td>
<td>3.09(0.988)</td>
<td>3.21(0.873)</td>
<td>0.195</td>
</tr>
<tr>
<td>Face to Face via Video Call Satisfaction</td>
<td>3.47(1.05)</td>
<td>3.50(0.937)</td>
<td>0.747</td>
</tr>
</tbody>
</table>

*Table 1: depicts the means and standard deviations of CESD scores for during the COVID-19 pandemic and currently. They are shown as mean (standard deviation)*

*Significance code: 0 '***', 0.001 '**', 0.01 '*'*
APPENDIX M: TABLE 2

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>COVID-19 CESD</th>
<th>Current CESD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>79</td>
<td>19.1(11.6)</td>
<td>18.3(11.0)</td>
</tr>
<tr>
<td>Females</td>
<td>44</td>
<td>19.5(13.7)</td>
<td>15.1(11.0)</td>
</tr>
<tr>
<td>Female-to-Male (FTM) Transgender</td>
<td>1</td>
<td>38.0(N/A)</td>
<td>29.0(N/A)</td>
</tr>
<tr>
<td>Non-binary</td>
<td>3</td>
<td>25.7(15.8)</td>
<td>26.0(5.66)</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>4.50(0.707)</td>
<td>23.0(22.6)</td>
</tr>
</tbody>
</table>

Table 2: depicts the mean and standard deviations of CESD scores based on gender. They are shown as mean (standard deviation)
AUTHORS BIOGRAPHY

Alexis Banner was born in Newark, Delaware on October 29, 2001. She was raised in Delaware until the age of 14 where she moved to Florida and graduated from Venice High School. Majoring in psychology, Alexis has a minor in marketing.

Upon graduation, Alexis plans to return to Florida and gain experience in the realm of psychology before working on an advanced degree in clinical psychology.