

Social Media: Friend or Foe to Adolescents During the COVID-19 Pandemic

Kaylee A. Fishback, University of Windsor, Canada

Abstract: During the COVID-19 pandemic, adolescents relied on technology for their education and for communication with friends and family (Pfefferbaum & North, 2020). With the recency of the pandemic, there has not been an abundance of research on the effects of increased internet and social media use on adolescent mental health. This study examined how the frequency of adolescents' social media use is associated with depression rates during the pandemic by using a longitudinal design. Participants included 351 adolescents, aged 14-19, residing in Ontario, Canada, who completed two surveys six months apart from each other. The findings indicated that, in line with the hypotheses, females engaged in more social media use and experienced greater depression than males. Regression analyses further revealed that Time 1 social media use significantly predicted Time 2 depression in females only.

Keywords: social media, depression, adolescents, COVID-19 pandemic, gender

Introduction

The world has become reliant on technology, even when times are good and people can socialize face-to-face. However, technology use drastically increased as the COVID-19 pandemic unfolded (Pfefferbaum & North, 2020). Many people suddenly relied on technology for their occupations, education, and communication with friends and family. Furthermore, the adolescent population, particularly females, who were already consumed by new technology, became reliant upon it in a way that they never were before (Pfefferbaum & North, 2020). For many years, adolescent social media use has been a controversial topic amongst scholars, educators, and healthcare advisers. Some commentators believe that long hours on social media is detrimental to the mental health of adolescents (Campbell et al., 2021; Marengo et al., 2018; McNamee et al., 2021), while others believe that the benefits outweigh the potential detriments (Dwivedi et al., 2018). This study intends to fill the gaps in the current literature by examining the relationship between the frequency of social media use and depression rates in a sample of adolescents during the COVID-19 pandemic.

Literature Review

The Effects of Screen Time

In a study completed by Maras et al. (2015), the authors sought to determine whether screen time was associated with depression and anxiety in Canadian adolescents. Participants were a sample of 2428 grade seven to twelve students aged 11.08 to 20.75 years old, residing in Ottawa, Ontario. Their current mental health status, depression and anxiety levels, and screen time, were measured using various multidimensional scales. After controlling for covariates, the study's findings indicated that higher durations of screen time (i.e., playing video games and using the computer) were associated with significantly higher rates of depression and anxiety (Maras et al., 2015). The total duration of screen time had a significant impact on the severity of participant anxiety and depression. Therefore, the more time adolescents spent in front of a screen, the higher their risk of exhibiting moderate to severe anxiety and depression symptoms. The work done by Harjule and colleagues (2021) confirmed these results, stating that parents of school-aged youth reported that the increased screen time due to mandatory online learning had a noticeably negative impact on their child's mental health, citing symptoms of severe anxiety and depression (Harjule et al., 2021).

Social Media and Loneliness

Due to the global COVID-19 pandemic, social media and technology have become a necessity for most adolescents, especially among those removed from school and situated in newfound isolation at home. However, due to how social media has changed our everyday communication, social media sites meant to encourage communication have the opposite effect (Solomon, 2016) due to concerns around bullying, peer pressure, rumour initiation, drama, lack of in-person connection resulting in loneliness, and the unrealistic perspective of the lives of others (Anderson & Jiang, 2018). Lopata and Weiss (1973) theorized that there are two types of loneliness: social and emotional. Social loneliness, according to Lopata and Weiss is the feeling of being an outcast due to a lack of purposeful friendships

and a lack of belonging in one's community. Emotional loneliness is the unsettling feeling of emptiness due to a lack of intimate relationships. Moody (2001) adopted Lopata and Weiss' definitions of loneliness and examined their relations to internet use. Moody found that although high levels of internet and social media use were associated with lower levels of self-reported social loneliness among adolescents, they were associated with higher levels of emotional loneliness. In contrast, a high degree of in-person interaction was associated with lower levels of both social and emotional loneliness. Thus, even though the internet is used as a communication tool, it still elicits emotional loneliness.

Gender Differences in Social Media Usage

Many adolescents turn to popular social media sites (e.g., Instagram and Snapchat) to alleviate the feeling of loneliness (Papapanou et al., 2023; Sarman & Tuncay, 2023). Marengo et al. (2018) found that highly visual social media sites, such as Facebook, Instagram, and Snapchat, have significantly increased in popularity among adolescents in recent years. Their study investigated the association between time spent on highly visual social media, mental health concerns, and adolescent body image concerns. Marengo et al. found that adolescents who use highly visual social media for more than two hours per day reported significantly stronger mental health and body image concerns when compared to their peers who do not use highly visual social media. Of the adolescent sample ($n = 523$) that Marengo and colleagues studied, 28.9% of females used highly visual social media for more than two hours per day compared to 7.1% of males. Therefore, due to the extra amount of time spent on social media, females were predisposed at a more rapid rate to mental health concerns (such as anxiety and depression), and body image concerns than males (Marengo et al., 2018). According to Cavioni and colleagues (2021), adolescent life satisfaction and adjustment mediates school relationships and their mental health. Therefore, adolescents who are predisposed at a higher rate to mental health concerns may experience poorer psychological adjustment to changes in their life, such as adjusting to the COVID-19 pandemic and online education (Marengo et al., 2018).

Social Media and Adolescent Mental Health

According to a cross-sectional online survey implemented by Campbell et al. (2021) and completed by 761 high school students across two high schools in Georgia in March of 2020, increases in screentime during the COVID-19 pandemic may impact the long-term health of adolescents. The study by Campbell et al. aimed to gather information regarding student behaviour changes over the COVID-19 pandemic. It is evident that these high school students were spending an excessive amount of time using screens during school hours and after school hours due to 82% of respondents reporting an increase in screen time, such as using social media, aside from being in online classes (Campbell et al., 2021). Increased screen time may represent a risk factor for anxiety and depression in adolescents that may be compounded by mandatory learning during the COVID-19 pandemic (Harjule et al., 2021; Maras et al., 2015; Yaghi, 2022).

Furthermore, social media has drastically changed the way in which people communicate and what they value while communicating (Solomon, 2016). People went from valuing face-to-face relationships to having a digital relationship with someone over the internet in less than a generation (Solomon, 2016). These new relational challenges created by the internet have also caused mental health concerns (e.g., depression and anxiety) resulting from comparison due to artificial and unattainable standards of beauty, as our social media portrayals are not always an accurate depiction of our true selves (Rege, 2009). However, with the global pandemic, meeting people in-person has become more challenging due to the COVID-19 social restrictions, and therefore, unnatural social media representations have become more pervasive. Thus, the reliance and increased use of social media has resulted in individuals internalizing these feelings when they cannot see others face-to-face, and therefore questioning the legitimacy of their relationships (Rege, 2009).

Considering the significant results of the previous literature before social media became a significant and primary form of communication due to the COVID-19 pandemic, it is essential to study the relationship between social media use and depression in adolescents within the context of the COVID-19 pandemic to determine the impact that social media as an involuntary, primary form of communication had on young, developing minds. The current study's aim is to examine how adolescents' frequency of social media use is associated with depression rates during the COVID-19 pandemic utilizing a longitudinal design. It was predicted that a greater frequency of social media use during the pandemic would predict an increase in adolescent depression rates, even after controlling for

pre-pandemic social media use (H1). Furthermore, it is expected that the relationship between social media use and depression will be stronger for females than for males (H2). Finally, it is predicted that females will engage in more social media use than males and have increased depression rates (H3).

Theoretical Framework

This research utilized the Social Comparison Theory (SCT) to explore the relationships between adolescent social media use and depression rates during the COVID-19 pandemic and their implications. According to SCT, individuals are driven to look to others and gather the opinions of others when evaluating themselves (Festinger, 1957). People expect the thoughts and images described by others to “be obtainable and realistic, and subsequently, make comparisons among themselves, others and the idealized images” (Festinger, 1957, p. 16). According to SCT, social and personal worth are determined by evaluating ourselves against other people. With the increased use of social media by adolescents, these effects are exacerbated (Festinger, 1957; Marengo et al., 2018; Papapanou et al., 2023).

Method

Participants

Participants in this study included 351 adolescents aged 14-19 years ($M_{age} = 16.93$, $SD = 0.90$) living in Ontario, Canada who completed both the Time 1 and Time 2 surveys, as part of a larger study. The retention rate from Time 1 to Time 2 was 38%. There were 276 females and 67 males ($n = 343$) whose data was used in the analysis of this study (see Table 1). An additional eight participants were removed from analyses. Out of these eight, four identified as transgender, three indicated there was not an appropriate gender option for them, and one preferred not to disclose their gender. Unfortunately, due to these small group sizes, there was not enough statistical power to include them in the analyses.

Table 1

Demographic Statistics: Ethnicities of Participants

	<i>n</i>	%
White/European	220	62.5
Black North American/African	10	2.8
Asian	74	21
Hispanic/Latino	9	2.6
East Indian	11	3.1
Aboriginal/North American Indian	2	0.6
Other	23	6.5
Prefer not to answer	2	0.6

Measures

Depression. The six-item depression subscale of the Brief Symptom Inventory (BSI) was used to measure depression (Derogatis, 1975). This scale is appropriate for adolescents over the age of 13. Additionally, the scale has excellent psychometric properties and connections to other measures of depression (Derogatis, 1975; Derogatis & Melisaratos, 1983). To measure depression scores, participants were asked to think back over the past seven days and rate how they were feeling based on prompts such as, “feeling hopeless about the future”. The rating scale ranged from 0 (*not at all*) to 4 (*extremely*) with higher scores indicating greater depressive symptoms. The items were

averaged to create a single index in which a higher score indicated a higher response across the items (Time 1 $\alpha = .882$ and Time 2 $\alpha = .883$).

Social Media Use. In order to measure social media use, participants were asked to rate how many hours per day, on average they spent on social media platforms, such as *Facebook*, *Instagram*, *Snapchat*, and *TikTok* in the past three weeks. To obtain the most accurate responses, eight different response options were provided (*less than 10 minutes*, *10-30 minutes*, *31-60 minutes*, *1-2 hours*, *2-3 hours*, *3-5 hours*, *5-10 hours*, and *more than 10 hours*). The data from both Time 1 and Time 2 social media use, while controlling for pre-pandemic social media use, were averaged to create a measure of social media use across the pandemic. In the first survey, participants were also asked about their frequency of social media use during the six months prior to the COVID-19 crisis using the same Likert scale above. This was used as a covariate in the analyses.

Procedure

Recruitment and data collection for Survey 1 occurred from April 4th to April 16th, 2020, approximately three weeks after secondary schools in Ontario, Canada were closed indefinitely due to the COVID-19 pandemic, and Canadian citizens were encouraged to practice social distancing. An advertisement was posted to the research lab's Instagram page and promoted on 16 to 18-year-old Ontarians' Instagram pages for one week. It is important to note that recruiting via Instagram may have resulted in a skewed sample that favoured avid social media users, since adolescents must have been using Instagram to view the posted study recruitment material. Adolescents younger than 16 years of age were not recruited on Instagram due to logistical issues of having to secure online parental consent. The survey link was also e-mailed to a group of adolescents ($n = 155$; 14-18 years of age) who were, at the time, completing a longitudinal survey for the research lab and for whom those under age 16 had already received parental consent.

Survey 1 contained demographic questions such as gender, education level, and age. Participants were then asked questions regarding their social media use. Participants were also asked questions on a scale pertaining to their mental health, specifically depression, which were then translated to become the Time 1 depression average. After the survey was completed, participants were asked to create a unique participant identification (ID) using their initials and first four letters of the name of the street that they live on to maintain their anonymity but also have a way to link their data to their data in Survey 2, if they chose to participate in the second study.

Participants were contacted again in late August of 2020, approximately three months after they completed Survey 1 by the researchers via email. The email invited them to complete Survey 2 through a link provided using their participant ID between August 21st and September 6th. Survey 2 contained the same measures as Survey 1, however, with slightly different wording in order to represent the time lapse of three months. Again, participants were asked questions on a scale pertaining to their mental health, specifically depression, which were then translated to become the Time 2 depression average.

Each survey took participants approximately 30 minutes to complete. Participant reimbursement for Study 1 completion included entry into a draw to win one of twenty \$50 gift cards or a set of Air Pods and reimbursement for Study 2 completion included a \$15 electronic gift card.

Analysis

To test H1, that social media use during the pandemic would predict increases in depression, two linear regressions were run using the PROCESS macro in the statistical software SPSS Version 27. In the first linear regression, gender, social media use before the pandemic, social media use during the pandemic and an interaction between gender and social media use during the pandemic were included as predictors of Time 2 depression. The interaction between gender and social media use allowed for the testing of H2, that the relationship between social media use during the pandemic and depression would be stronger for females as opposed to males. In the second linear regression, Time 1 depression was included as an additional predictor, to examine whether social media use influenced changes in depression from Time 1 to Time 2.

Finally, in order to address H3, that females would be higher in social media use and depression than males, four independent samples *t*-tests were conducted with gender as the independent variable and Time 1 and 2 social media use and depression as the dependent variables.

Results

Descriptive Statistics

Table 2 reports the means, standard deviations, average depression scores at Time 1 and Time 2, social media scores at Time 1 and Time 2, average social media use, and correlations.

Table 2

Descriptive Statistics: means, standard deviations, average social media score, social media use at Time 1 and Time 2, average depression scores at Time 1 and Time 2, correlations

	<i>M (SD)</i>	1	2	3	4	5
1. Average Social Media Use	4.81 (1.24)	--	0.47***	0.15**	0.69***	0.10
2. Social Media Use (T1)	5.56 (1.40)	--	--	0.17**	0.48***	0.17**
3. Depression (T1)	1.84 (1.03)	--	--	--	0.28***	0.64***
4. Social Media Use (T2)	6.04 (1.26)	--	--	--	--	0.15**
5. Depression (T2)	1.53 (0.99)	--	--	--	--	--

Note. * $p \leq 0.05$, ** $p < 0.01$, *** $p < 0.001$

Average social media use during the pandemic had a mean of 4.81 ($SD = 1.24$) which was equal to one to two hours of social media use on average, per day. Furthermore, at Time 1, the average social media use score was 5.56 (i.e., 2-3 hours per day; $SD = 1.40$) with an average depression score of 1.84 out of 4 (i.e., “moderately” experiencing depressive symptoms; $SD = 1.03$). Moreover, the average social media use at Time 2 was 6.04 (i.e., 3-5 hours per day; $SD = 1.26$) with an average depression score of 1.53 out of 4 (i.e., “moderately” experiencing depressive symptoms; $SD = 0.99$). Therefore, the average depression score was lower at Time 2 than it was at Time 1.

There were also several correlations, the most predominant being the relationship between social media use and depression. Social media use at Time 1 and Time 2 were both significantly and positively correlated with depression at Time 1 and Time 2 (see Table 2).

Hypothesis Testing

In the first regression, it was found that the interaction term between social media use during the pandemic and gender was a significant predictor of Time 2 depression rates ($B = 0.30$, $t = 2.66$, $p = 0.01$; see Table 3, Model 1).

Table 3

Results of Regression Analysis Predicting Depression Increasing Due to Increased Social Media Use

	Model 1		Model 2		Model 3	
	T2 Depression		T2 Depression (Controlling for T1 Depression)		Predicting T2 Social Media Use	
	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>	<i>B</i>	<i>SE</i>
Gender	-1.43	0.64	-0.78	0.54	--	
Average Social Media Use	-0.05	0.11	-0.11	0.09	--	
T1 Social Media Use	--		--		0.30***	0.08
T1 Depression	--		0.61***	0.04	-0.03	0.15
Social Media Average X Gender	0.30**	2.66	0.17	0.09	--	
T2 Social Media Use X Gender	--		--		0.32***	0.08
T1 Depression X Gender	--		--		0.15	0.17

Note. * $p \leq 0.05$, ** $p < 0.01$, *** $p < 0.001$

No other significant predictors emerged. A simple slopes analysis revealed that, consistent with H2, the relationship between social media use and depression was not significant for males ($B = -0.05$, $t = 0.50$, $p = 0.62$) but the relationship was significant for females ($B = 0.25$, $t = 3.64$, $p = 0.00$). Therefore, increased social media use predicted greater depression for females but not for males in this sample.

In the second regression, only Time 1 depression was a significant predictor of Time 2 depression ($B = 0.61$, $t = 13.90$, $p = 0.00$; see Table 3, Model 2). Furthermore, once this variable was included, the interaction term between gender and social media use became marginally significant ($B = 0.17$, $t = 1.80$, $p = 0.07$; see Table 3, Model 2). Thus, these results suggest that, while females' social media use predicted depression rates, it did not significantly predict increases in depression from Time 1 to Time 2.

Given that social media use did not predict increased depression, it was imperative to investigate whether the relationship between the two variables was working in the opposite direction – Does depression predict increases in social media use? It could be that the temporal relationship between social media and depression is reversed to what was hypothesized. A further exploratory analysis examined this reciprocal relationship in a regression with Time 1 depression predicting changes in social media use. However, neither Time 1 depression ($B = -0.03$, $t = -0.18$, $p = 0.86$; see Table 3, Model 3), or the interaction between Time 1 depression and gender ($B = 0.15$, $t = 0.90$, $p = 0.37$; see Table 3, Model 3) were significant predictors of changes in social media use over time.

Lastly, consistent with H3, independent samples t -tests found that females ($M = 6.16$, $SD = 1.20$) used social media significantly more frequently than males ($M = 5.55$, $SD = 1.37$) did, but only at Time 2, $t(339) = -3.61$, $p = 0.00$. In contrast, there was no significant gender difference in social media use at Time 1 (Female $M = 5.60$, $SD = 1.38$ and Male $M = 5.38$, $SD = 1.54$), $t(340) = -1.15$, $p = 0.25$. Furthermore, consistent with H3, females ($M = 1.57$, $SD = 0.98$) had significantly higher depression scores than males ($M = 1.27$, $SD = 1.04$), but only at Time 2, $t(341) = -2.27$, $p = 0.02$. Again, there was no significant gender difference in depression at Time 1 (Female $M = 1.86$, $SD = 1.01$ and Male $M = 1.59$, $SD = 1.04$), $t(329) = -1.90$, $p = 0.06$. Therefore, H3 was only partly supported.

Discussion

The goal of this study was to determine whether social media use predicted depression in adolescents during the COVID-19 pandemic, and whether this relationship was dependent on gender. Overall, links between social media use and depression were established, specifically for females; however, social media use did not predict increases in depression over time, from Time 1 (April 2020) to Time 2 (August 2020). Furthermore, evidence was provided to suggest females experienced more social media use and depression than males, specifically during the middle of the pandemic (August 2020). These results are supported by SCT and emphasize adolescent females' need for support during the COVID-19 pandemic, especially concerning their mental health and social media behaviours. This is especially important with the implications of online learning during the COVID-19 pandemic.

Societal restrictions fluctuated considerably throughout the COVID-19 pandemic, especially in Ontario, Canada. After COVID-19 was declared a worldwide pandemic on March 11th, 2020, the initial lockdown took place in Ontario, marking the first of many during the COVID-19 pandemic. This lockdown affected people of all ages; however, there were unique consequences for adolescents due to the importance of in-person, peer socialization (Dwivedi et al., 2018; Pfefferbaum & North, 2020). In line with the results of the current study, adolescents are not indifferent to the negative psychological effects (e.g., increased anxiety and fearing the future) that this pandemic caused amongst Canadians due to the changes in their environment (Imran et al., 2020). The rapid changes across Canada resulted in substantial shifts to the routines of adolescents as they transitioned to online learning overnight (Imran et al., 2020). This caused uncertainty and fear amongst many teens as they navigated the new, mandatory online learning system (Imran et al., 2020; Yaghi, 2022).

Consistent with H2, however, social media use during the pandemic did predict greater depression for females. Furthermore, in line with H3, depression and social media use were higher for females than for males at Time 2. These gender differences are important as the results align with those of Marengo et al. (2018) and Twenge et al. (2018), who found that females are at a greater risk of depression and that their increased social media use may be the cause of their escalated depression risk. It is important to note that this finding further demonstrates that social media use during the pandemic is particularly associated with higher reported levels of depression, rather than increased social media use in general, as pre-pandemic use of social media was controlled for. This finding thus emphasizes the need for additional focus on adolescent social media use during the pandemic.

Implications

The present study underscores the distinct challenges faced by female adolescents during the COVID-19 pandemic. In addition to depressive symptoms, Nutsugbodo and colleagues (2022) reported that female students are more likely to experience increased anxiety levels while learning online than males. Since a large reason for the significant increase screen time for adolescents during the COVID-19 pandemic was due to mandatory online learning, there is a need for increased student resources that directly address their new online reality. Nutsugbodo and colleagues (2022) found that increased social support mediated the negative effects of online learning. The authors found that when implemented, social support has a positive impact on student mental health which demonstrates the need for further student support post-pandemic to help in decreasing the negative effects of increased screen time, social media use, and mandatory online learning. (Nutsugbodo et al., 2022; Yaghi, 2022). The results of the current study emulate the concerns that Nutsugbodo and colleagues indicated regarding females being at a higher risk of mental health concerns, specifically depression, following the COVID-19 pandemic. While research indicates that social support is imperative for female adolescents specifically, education regarding internet use, particularly social media use, may also be beneficial to help moderate associations with depressive symptoms.

Limitations

First, the use of self-report surveys may introduce self-report biases (Miller, 2011). Some adolescents may not have been comfortable answering the questions in the study truthfully even though the survey was strictly anonymous (Tarrant et al., 2011). This may have hindered the accuracy of social media use and depression rates. Self-reported answers may be inaccurate, exaggerated, or false if participants do not want to disclose their true responses. Determining the truthfulness of participant responses is inherently challenging. Moreover, mental health remains a stigmatized topic in many families and educational systems (Swartz et al., 2010). As such, some adolescents

experiencing depression may have felt ashamed or embarrassed and therefore chose not to answer the survey questions accurately. One thing that researchers can do to encourage accurate responses is to include an option for participants to select "I prefer not to answer" for each survey question. This allows participants to not respond to select questions but proceed with the rest of the study if they wish. While self-report surveys have their limitations, they were a practical choice, especially during periods of social distancing such as the COVID-19 lockdowns.

Secondly, there may have been a lack of statistical power to detect significant results for males as compared to females given there was a vastly different male ($n = 67$) to female ($n = 276$) ratio. Females accounted for almost 81% of the participant sample. Therefore, this sample is not representative of the entire adolescent population.

Conclusion

This study expanded on previous findings by linking social media use, depression, gender, and the recent COVID-19 pandemic through a longitudinal design. The results highlighted a linkage between social media use during the pandemic and subsequent depression in females, though this association did not persist over time. Therefore, there is a need for education and further supports specifically for adolescent females post-pandemic.

REFERENCES

- Anderson, M., & Jiang, J. (2018). *Teens, social media & technology 2018*. Pew Research Center. https://assets.pewresearch.org/wp-content/uploads/sites/14/2018/05/31102617/PI_2018.05.31_TeensTech_FINAL.pdf
- Cavioni, V., Grazzani, I., Ornaghi, V., Agliati, A., & Pepe, A. (2021). Adolescents' mental health at school: The mediating role of life satisfaction. *Frontiers in Psychology, 12*, 1–12. <https://doi.org/10.3389/fpsyg.2021.720628>
- Derogatis, L. R. (1975). Brief symptom inventory. *European Journal of Psychological Assessment, 1*. <https://doi.org/10.1037/t00789-000>
- Derogatis, L. R., & Melisaratos, N. (1983). The brief symptom inventory: An introductory report. *Psychological Medicine, 13*(3), 595–605. <https://doi.org/10.1017/S0033291700048017>
- Dwivedi, Y. K., Kelly, G., Janssen, M., Rana, N. P., Slade, E. L., & Clement, M. (2018). Social Media: The good, the bad, and the ugly. *Information Systems Frontiers, 20*(3), 419–423. <https://doi.org/10.1007/s10796-018-9848-5>
- Festinger, L. (1957). Social comparison theory. *Selective Exposure Theory, 16*, 16–18.
- Harjule, P., Rahman, A., & Agarwal, B. (2021). A cross-sectional study of anxiety, stress, perception and mental health towards online learning of school children in India during COVID-19. *Journal of Interdisciplinary Mathematics, 24*(2), 411–424. <https://doi.org/10.1080/09720502.2021.1889780>
- Imran, N., Zeshan, M., & Pervaiz, Z. (2020). Mental health considerations for children & adolescents in COVID-19 Pandemic. *Pakistan Journal of Medical Sciences, 36*(COVID19-S4), S67–S72. <https://doi.org/10.12669/pjms.36.COVID19-S4.2759>
- Lopata, H. Z., & Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation*. The MIT Press.
- Maras, D., Flament, M. F., Murray, M., Buchholz, A., Henderson, K. A., Obeid, N., & Goldfield, G. S. (2015). Screen time is associated with depression and anxiety in Canadian youth. *Preventive Medicine, 73*, 133–138. <https://doi.org/10.1016/j.ypmed.2015.01.029>
- Marengo, D., Longobardi, C., Fabris, M. A., & Settanni, M. (2018). Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image concerns. *Computers in Human Behavior, 82*, 63–69. <https://doi.org/10.1016/j.chb.2018.01.003>
- McNamee, P., Mendolia, S., & Yerokhin, O. (2021). Social media use and emotional and behavioural outcomes in adolescence: Evidence from British longitudinal data. *Economics and Human Biology, 41*, 100992. <https://doi.org/10.1016/j.ehb.2021.100992>
- Miller, A. L. (2011). *Investigating Social Desirability Bias in Student Self-Report Surveys*. ERIC. <https://eric.ed.gov/?id=ED531729>
- Moody, E. J. (2001). Internet use and its relationship to loneliness. *CyberPsychology & Behavior, 4*(3), 393–401. <https://doi.org/10.1089/109493101300210303>
- Nutsugbodo, R. Y., Mensah, C., Amissah, E. F., & Baah, N. G. (2022). COVID-19, parental job losses, online learning anxiety, and social support of hospitality and tourism students. *Journal of Hospitality & Tourism Education, 1–14*. <https://doi.org/10.1080/10963758.2022.2056468>
- Papapanou, T. K., Darviri, C., Kanaka-Gantenbein, C., Tigani, X., Michou, M., Vlachakis, D., Chrousos, G. P., & Bacopoulou, F. (2023). Strong correlations between social appearance anxiety, use of social media, and feelings of loneliness in adolescents and young adults. *International Journal of Environmental Research and Public Health, 20*(5), 1–10. <https://doi.org/10.3390/ijerph20054296>
- Pfefferbaum, B., & North, C. S. (2020). Mental health and the Covid-19 pandemic. *New England Journal of Medicine, 383*, 510–512. <https://doi.org/10.1056/NEJMp2008017>
- Rege, A. (2009). What's love got to do with it? Exploring online dating scams and identity fraud. *International Journal of Cyber Criminology, 3*(2), 494–512.
- Sarman, A., & Tuncay, S. (2023). The relationship of Facebook, Instagram, Twitter, TikTok and WhatsApp/Telegram with loneliness and anger of adolescents living in Turkey: A structural equality model. *Journal of Pediatric Nursing, 72*, 16–25. <https://doi.org/10.1016/j.pedn.2023.03.017>
- Solomon, M. (2016). *Social media and self-evaluation: The examination of social media use on identity, social comparison, and self-esteem in young female adults*. William James College.
- Swartz, K. L., Kastelic, E. A., Hess, S. G., Cox, T. S., Gonzales, L. C., Mink, S. P., & Raymond DePaulo Jr, J. (2010). The effectiveness of a school-based adolescent depression education program. *Health Education & Behavior, 37*(1), 11–22. <https://doi.org/10.1177/1090198107303313>

- Tarrant, M. A., Manfredo, M. J., Bayley, P. B., & Hess, R. (2011). Effects of recall bias and nonresponse bias on self-report estimates of angling participation. *North American Journal of Fisheries Management*, 13(2), 217–222. [https://doi.org/10.1577/1548-8675\(1993\)013<0217:EORBAN>2.3.CO;2](https://doi.org/10.1577/1548-8675(1993)013<0217:EORBAN>2.3.CO;2)
- Twenge, J. M., Joiner, T. E., Rogers, M. L., & Martin, G. N. (2018). Increases in depressive symptoms, suicide-related outcomes, and suicide rates among US adolescents after 2010 and links to increased new media screen time. *Clinical Psychological Science*, 6(1), 3–17. <https://doi.org/10.1177/2167702617723376>
- Yaghi, A. (2022). Impact of online education on anxiety and stress among undergraduate public affairs students: A longitudinal study during the COVID-19 pandemic. *Journal of Public Affairs Education*, 28(1), 91–108. <https://doi.org/10.1080/15236803.2021.1954469>

ABOUT THE AUTHOR

Kaylee Fishback is a graduate of Western University with an Honours Bachelor of Arts degree in Psychology. Before commencing her Master's Degree in Education at the University of Windsor, she was employed in educational development. Kaylee's research is focused on child and adolescent development, social media use, and mental health within education. Her research involvement and professional experiences culminated in her goal to pursue doctoral work in the future.