

Is There Enough Evidence for the Argument that Social Media Use Causes Mental Health Concerns in Young Adults?

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Abstract

This paper provides a critical examination of the current evidence for correlational and causal relationships between social media use and mental health and determines the strength of the evidence. This research included a literature review of 11 studies, consisting of two cross-sectional studies, three longitudinal studies, and six experiments. This paper revealed that the current evidence available is not robust enough to definitively indicate a causal connection between social media use and mental health concerns in young adults. The paper highlights various alternative explanations for the relationships observed in past research and suggests paths for future research that could yield stronger evidence for causality.

Keywords: social media, mental health, young adults, research

1. Introduction

In November of 2017, a 14-year-old girl named Molly Russel committed suicide in her room. It was later discovered that before her suicide, she had been exposed to graphic content related to self-harm on social media platforms, such as Instagram and Pinterest. This revelation led many to question the extent to which such negative online content was a major contributor to her suicide. In the inquest of Russel's case, which concluded in 2022, a coroner ruled that she died from "an act of self-harm while suffering from depression and the negative effects of online content" and determined that social media had contributed to her suicide ("Molly Russell: Friend", 2022).

The tragedy raises pressing questions: To what extent does social media impact the mental health of adolescents and young adults? Furthermore, is this relationship truly causal, such that viewing the content caused her suicide, or merely correlational and explainable by other factors, such as depression leading both to social media consumption and suicide, or other variables that correlate with both media use and mental health problems?

The vulnerability of adolescents and young adults to mental health challenges has long been documented. According to a youth risk survey conducted by the Center for Disease Control and Prevention (CDC) in 2021, there is a growing number of adolescents reporting poor mental health (Centers for Disease Control and

Prevention, 2021). Hence, it is necessary to recognize social media's role in young adults' mental health to determine intervention measures to be taken in the future. Currently, there are two main opposing viewpoints concerning this topic. The first view posits that the relationship between social media use and the mental health of young adults can be either negative or positive, whereas the second view posits that the effects of social media on mental health are solely negative. The latter viewpoint leads to a key question: is any negative connection between social media use and mental health merely correlational or is it causal?

This literature review assesses the potential correlational and causal relationship between social media use and mental health among young adults. Ultimately, this will address the question of whether the evidence warrants intervention to prevent more tragic deaths, like Molly's. This review synthesizes contemporary studies and proposes explanations for observed associations, and indicates paths for future studies to address crucial gaps.

2. Method

The studies were selected based on literary searches via Google Scholar, using content-related search terms including "social media," "mental health," "adolescents," and "young adults," and evidence-related search terms such as "causal," "correlational," and design-related search terms including "experiment," "questionnaires," "cross-sectional," "longitudinal". All selected were either highly cited or noteworthy for their strong methodology. To further limit to experiments, the search terms "random assignment" and "experiments" were used. The timeframe for the experimental evidence was limited to studies published within the previous ten years.

A total of 11 studies were reviewed, consisting of two cross-sectional studies, three longitudinal studies, and six experiments. The average age of the individuals in the studies was about 19 years old, with a mean number of 25,182 participants in the sample of each study. Eight studies completed their data gathering before the COVID-19 pandemic, while three gathered the data after the pandemic outbreak. As presented below, one study revealed that moderate engagement in digital activities was not associated with harm and may even contribute to mental well-being. Four studies supported a

positive correlation between social media use and adverse mental health outcomes in between-subjects analysis (cross-sectional studies), and six studies supported a causal connection between social media use and negative mental health.

3. Discussion

The current evidence predominantly reveals a negative correlational relationship between social media use and mental well-being. This observation mainly attributed to:

- 1) The prevalence of correlational studies is one consequence of ethical considerations associated with using adolescents as subjects of an experiment, hence there is insufficient evidence to establish a causal connection.
- 2) Many experiments were completed before COVID-19, raising concerns about their contemporary relevance. For example, Allcott et al.'s experiment on deactivating Facebook during the 2018 US midterm election also included a simultaneous "increase of offline activities such as socializing with family and friends." After a long period of quarantine, with a global establishment of online connections and a higher frequency of social media exposure, the influence of social media, mode of social interactions, as well as the criterion of self-esteem assessment may have shifted, signifying a reevaluation of the causal connection.
- 3) The field lacks experiments in other cultures, particularly in Eastern cultures. For example, studies in this field from China are mostly correlational studies, limiting the generalizability of findings across other cultures.

3.1 Correlational Studies

The available literature contains mostly correlational studies. The five studies reviewed included an average of 29,194 participants from China, the United States, and the United Kingdom, with an age range of 12-20 (with a mean age of 15). Among these studies, there are three longitudinal studies and two cross-sectional questionnaires. Four were published in the pre-covid times. Three focused on digital activities (internet use) in general, instead of only social media use.

Four of the studies observed a positive correlation between internet use and negative

mental health outcomes, which were variably defined to include depression and anxiety symptoms, self-esteem issues, and life dissatisfaction. It is worth noting that one study supported a curvilinear relationship between social media and mental health, suggesting that digital activities at a moderate level did not correlate with mental health harm, whereas negative mental health outcomes were more prevalent beyond a threshold (Przybylski, A. K., & Weinstein, 2017). In addition, a longitudinal study found no link between social media usage time and mental health in within-person measurements, though an association was identified in between-subjects analyses (Coyne et al., 2019).

In addition, all five studies identified other variables that may influence or strengthen the correlation between social media use and mental health concerns. Two studies demonstrated gender differences, with a stronger association between social media use and negative mental health among girls compared to boys (Kelly et al., 2018; Zhou et al., 2021). Furthermore, Zhou et al.'s study further showed that the association is stronger among those with parents of lower educational levels, and those residing in less developed regions, pointing to socioeconomic status as a potentially influential factor.

3.2 Evaluation of Correlational Evidence

The correlational evidence offers more valuable insight into how individual backgrounds may influence the observed relationships. It is worth noting that in one study, three individual differences were recognized: the educational levels and socioeconomic status of the young adults' parents, the regional differences, specifically whether the adolescent's school was located in rural or urban settings, as well as the subject's gender difference. In addition, the research also showed that similar findings have emerged from different cultural backgrounds, which makes the results more compelling in terms of their generalization to a wider population (Zhou et al., 2021).

However, the correlational research is not without its flaws, including the problems of bidirectional ambiguity and potential extraneous variables. Bidirectional ambiguity is a common issue in correlational research, bringing out the question of whether mental health concerns precede an increase in social media usage. For instance, individuals who

experience loneliness and isolate themselves may often seek online support, or use social media as a temporary distraction, which confounds the directionality of the association. In addition, extraneous variables within every experiment may offer alternative explanations of the results. The type of content engaged with on social media could also influence their mental well-being differently. This would further weaken the correlation observed in the correlational studies.

More importantly, most of the studies examined internet usage in general, instead of directly focusing on the risks of social media usage. This may call the generalizability into question as the positive correlation between internet usage and mental health concerns may not necessarily stem from social media use. Moreover, the type of social media usage that is examined is not directly indicated in the studies. Youths at different ages may use social media in different ways—some for social interactions, and some for content creation. This could have different influences on one's mental health. Further concerns lie in the reliance on self-reported data to measure the social media usage time, which can be subject to inaccuracies. For instance, researchers for an eight-year longitudinal study mentioned their concerns about the potential underreporting of the data, and the inherent biases when non-clinical participants self-reported their levels of depression and anxiety (Coyne et al., 2019).

3.3 Experiments

Six experimental studies were identified. The age range of participants spanned from 18.8 to 33.83 years (with a mean age of 22.9), and the average sample size was 21,169 participants. Among these experiments, one is a quasi-experimental natural experiment (Braghieri et al., 2022), and the remaining five are experiments with random assignment to conditions. Four experiments gathered the data before the COVID outbreak, and all six studies involved participants from Western backgrounds.

The six studies differed in their primary focus, which led to their respective findings on the negative influence of social media use on young adults' mental health.

- 1) *Natural Experiment on the Introduction of Social Media*: The natural experiment is focused on measuring the influences of the

introduction of Facebook at a college before Facebook became popular between the spring of 2000 and 2008. Its findings showed that the introduction of social media has been partially responsible for the deterioration of mental health among young adults (Braghieri et al., 2022).

- 2) *Two Experiments on Reducing Social Media Use:* Two randomized experiments focused on measuring the influences of reducing social media use, assigning participants to either deactivate their Facebook accounts, thereby restricting their access to social media, or continuing their regular use (Thai et al., 2023; Allcott et al., 2020). The study of Facebook deactivation, a field experiment, occurred four weeks before the 2018 US midterm election and had a general focus on netizens who are young adults. The study found that Facebook deactivation reduced factual news knowledge and political polarization, increased subjective well-being, and led to a continuous decrease in Facebook use after the experiment. Specifically, the study documented that a decrease in social media use was associated with marked improvements in appearance and weight esteem in distressed youth with heavy social media use, with a noted 0.09 deviation improvement in subjective well-being (Allcott et al., 2020).
- 3) *Three Studies on the Consequences of Passive and Active Social Media Use:* These studies differentiated the influences of active versus passive social media use on mental health. In these studies, participants were randomly assigned to the active or passive social media use conditions. All three studies showed that passive social media use, more than active media use, had a detrimental effect on affective well-being over time (Park et al., 2015; Sagioglou & Greitemeyer, 2014; Yuen et al., 2019).

3.4 Evaluation of Causal Evidence

The current experiments consist of both strengths and limitations. In terms of strengths, many experiments offer a close approximation to real-life cases. For example, the natural experiment yields results carrying high ecological validity since the independent variable of social media usage is not manipulated by the researchers, but occurs

naturally (Braghieri et al., 2022). In addition, the field experiment is conducted within natural settings, leading to a high level of generalizability to real-life settings (Allcott et al., 2020). These two experiments have a large sample size, which may improve their level of generalizability, and reduce the extent of participant variability's influence on the results. Nonetheless, the current studies are not without limitations. Given that only 2/6 of the studies have gathered data in a post-COVID era, it is challenging to draw definite conclusions about whether the relationship between social media use and the mental health of adolescents has changed during a pandemic, marked by increased reliance on digital communication.

3.5 Counter Arguments

While it is concluded that there exists a well-justified, negative correlation between social media use and the mental health of young adults, it is also important to acknowledge that personal differences between individuals may limit the generalizability of such a conclusion. For instance, researchers have noted that the correlation between social media and mental health is a mix of positive and negative influences that varies between individuals, "conditioned and moderated by personal characteristics and cultural, historical, and socio-economic factors" (Hollis et al., 2020). Similarly, other scholars have also emphasized that social media's effects on mental health vary substantially between individuals (Orben & Blakemore, 2023). However, it is equally important to recognize that personal characteristics, inherent to any experimental design, cannot be fully excluded due to the nature of sampling participants. Moreover, the key correlational studies that have been reviewed, with an average sample size of 29,194 participants from diverse Eastern and Western backgrounds and varying socioeconomic levels, suggest sufficient external validity. This allows for confidence in the conclusions regarding a negative correlational relationship, despite the interference of "personal characteristics."

4. Future Directions

Additional research is required to determine whether there is a causal connection between social media use and mental health concerns and how strong such an association might be. There are several directions that future research may consider taking.

- 1) *More Race and Age of Sample.* Researchers should pay close attention to sample diversity. Considering that adolescents are the most active users of social media, more research should prioritize this demographic in general (Schønning et al., 2020). However, it is also important to note that there may be potential ethical considerations that are associated with including teenagers under 18 years of age in laboratory experiments and that parental consent is essential. Aside from age range, future researchers should also consider including more diversified demographics, or focusing on ethnicities that were not considered in previous experiments to enhance the generalizability of the results.
- 2) *Investigate the probability of reverse causality.* If future research could provide more information to resolve the issue of bidirectional ambiguity by conducting more well-controlled experiments, it would address a clear direction of causality.
- 3) *Focus on determining the differences between the influences of active and passive social media engagement.* Instead of asking participants to report their approximate time of social media usage in general, researchers may consider asking participants to specify their active and passive social media engagement or to state their preferences. This would allow for more precise and effective interventions to reduce the negative influences of social media, and also help future research to narrow their focus investigation to the core of the issue.
- 4) *Use methods other than self-reported data.* In previous studies, self-reported data was the most common method for measuring social media usage time. In the future, the data collection for both questionnaires and experiments can become more precise and reliable if alternative methods are used. For instance, digital trace data have been suggested to be a precise means of studying online adolescent behavior. It will also provide additional benefits, such as offering insight into whether exposure to different types of information on social media may have different influences on mental health, hence enabling more focused research to be conducted (Sultan et al., 2023).
- 5) *More experimental evidence regarding the*

possibility of curvilinear relationships. The ‘Goldilocks’ study suggested a nonlinear relationship between social media and mental health, which warrants further experimental exploration (Przybylski et al., 2017). Subsequent research could investigate such a possibility.

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