

SPECIAL COLLECTION: BEHAVIORAL ADDICTION TO TECHNOLOGY

The Effect of Self-Monitoring Limited Social Media Use on Psychological Well-Being

Manuela Ellen Faulhaber¹, Jeong Eun Lee², and Douglas A. Gentile³¹ Department of Human-Computer Interaction, Iowa State University² Department of Human Development and Family Studies, Iowa State University³ Department of Psychology, Iowa State University

An experimental study was conducted to investigate the effect of self-monitoring limited social media usage on psychological well-being. After completing pretest measures, 230 undergraduate students from a large Midwestern university were randomly assigned to one of two experimental conditions: either limit their social media usage to 30 min a day or to use social media as usual. After 2 weeks of limiting, the self-monitored group showed significant improvements in their psychological well-being. Anxiety, depression, loneliness, fear of missing out, and negative affect decreased while positive affect increased. These results suggest that limiting social media usage may improve psychological well-being on multiple dimensions. This study is one of the first to experimentally investigate feasible alternatives to social media use abstinence or experimenter-managed limitation. Future studies could investigate motivations and mechanisms of social media use through qualitative explorations.

Keywords: social media, human-computer interaction, well-being, media effects

Social media have become an integral part of modern life (Hogan & Quan-Haase, 2010). Social media are defined as internet-based applications that allow for user-generated content creation and consumption for entertainment (Obar & Wildman, 2015). A large proportion of people spend a lot of time on social media, more than they use many other media types. The average person spends approximately 2.5 hr per day compared to 2 hr watching broadcast TV (GlobalWebIndex, 2019). Because social media are pervasive and time-consuming, it is all the more concerning that negative effects on psychological well-being have been found to be associated with usage. Higher social media usage is associated with decreased psychological well-being, in particular increased anxiety, depression, loneliness, and fear of missing out (FoMO; Brown &

Kuss, 2020; Bruce et al., 2019; Dhir et al., 2018; Lin et al., 2016; Pantic et al., 2012; Vannucci et al., 2017).


Social media were first mentioned in 1979 with the birth of “Usenet,” a discussion system that allowed the user to post a public message (Kaplan & Haenlein, 2010). Before the second stage of internet development, “Web 2.0,” users were consumers of information, not creators (Kaplan & Haenlein, 2010). Obar and Wildman (2015) defined “Web 2.0” as an internet development stage for “user-generated content.” Nowadays, users are not only consumers; they can be producers and creators of their own content on social networking sites. As of 2020, Facebook is the largest social media platform with 2.8 billion active monthly users worldwide (Tankovska, 2021). This puts into perspective the scale of the potential for negative (or positive) social media usage effects.

Personal media (e.g., smartphones, tablets) provide easy access to social media. Perrin and Kumar (2019) found that adults with smartphones reported higher daily usage than adults without mobile connectivity. Social media and the internet were used exclusively on mobile devices by 86% of respondents, with 92% accessing them multiple times a day and 32% reporting being online “almost constantly.” Although 72% of surveyed adults use a least one social media platform, there is an emphasis on the usage of 18- to 29-year-olds who represent the largest age group with 90% of users, followed by 82% of 30- to 49-year-olds, 69% of 50- to 64-year-olds, and 40% of 65+-year-olds (Pew Research Center, 2019).

Obtaining accurate usage data in terms of minutes or hours spent has proven to be difficult since usage is difficult to track and mainly relies on self-reports of users. U.S. teens were asked how much time they were spending on the internet, including social media, on a daily basis. Researchers found that 45% of U.S. teens stated they are online “almost constantly,” and 44% were online “several times a day” (Anderson & Jiang, 2018). These numbers almost doubled

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ORCID iDs: Manuela Ellen Faulhaber  <https://orcid.org/0000-0001-7834-8320>.

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Contact Information: Correspondence concerning this article should be addressed to Manuela Ellen Faulhaber, Department of Human-Computer Interaction, Iowa State University, 2330 Palmer Building, 2222 Osborn Drive, Ames, IA 50011, United States. Email: manufa@iastate.edu

compared to the 2014–2015 survey, where 24% stated that they were online “almost constantly” (Lenhart, 2015). These results are consistent with findings reported by Urista et al. (2009), who concluded that young adults spent an average of 3 hr per day.

Overall, there are positive and negative effects of social media use, although the focus of extant research is weighted toward the negative. Positive effects of social media use are generally found in the context of connection, bonding, social relationships, and friendships as the belongingness hypothesis states that humans crave frequent and pleasant interactions with others (Baumeister & Leary, 1995).

Roberts and David (2020) found that FoMO, a dimension of well-being, can have a positive effect on social connection. They conducted two studies with 565 people to investigate the relations between social media use, FoMO, and psychological well-being. It was concluded that FoMO associated with social media use can have a positive effect on well-being but only if social media is being used to maintain social connections and cultivate relationships. Relatedly, Ostic et al. (2021) also investigated the effect of social media use on psychological well-being. They conducted a study with 940 college student participants from Mexico. The researchers found that social media use had a positive effect on psychological well-being by helping participants to maintain social bonding capital through staying in contact with family and friends virtually. They also concluded, however, that social media use can have negative effects through smartphone addiction and social isolation.

Compared to the body of research about the positive effects of social media use, the body of negative social media effects research is currently much larger. Social media use is associated with increases in anxiety, depression, loneliness, and FoMO. In general, spending extensive time on social media can have negative consequences on psychological well-being (Brown & Kuss, 2020; Bruce et al., 2019; Dhir et al., 2018; Lin et al., 2016; Pantic et al., 2012; Vannucci et al., 2017).

There is evidence that limiting social media time can improve psychological well-being. However, the results across studies are somewhat inconclusive. The majority of research in this area has found that restricting social media improved psychological well-being (Brown & Kuss, 2020; Hughes & Burke, 2018; Hunt et al., 2018; Tromholt, 2016). Some studies, however, have failed to find an effect (Hall et al., 2021; Hanley et al., 2019) or have found a negative effect (Vally & D’Souza, 2019). We describe some of these studies below.

One strategy to mitigate the negative effects of social media use is complete abstinence from social media platforms. Tromholt (2016) conducted a week-long experiment to examine the effects of social media abstinence with 1,095 individuals. Participants were instructed to abstain from using Facebook for 1 week. After 7 days, they were sent an online questionnaire to collect posttest data. Abstaining from using Facebook increased psychological well-being, including life satisfaction and an increase in positive emotions. However, they also noted that 13% of the treatment group participants reported noncompliance and indeed visited Facebook due to an “urgent need” or by “habitual accident.” Furthermore, participants voluntarily participated in the experiment and were curious about the outcome. This suggests that complete abstinence is difficult for the average user to maintain.

In contrast, Vally and D’Souza (2019) found that complete abstinence from all social media resulted in a decline of life

satisfaction, and an increase of loneliness due to the loss of social online connections. Participants from the United Arab Emirates were divided into two groups of 34 participants each in a randomized, controlled experiment. All participants were instructed to visit the research center, and the participants assigned to the treatment group had to abstain from all social media usage for 7 days, while the other group was instructed to continue using social media as they previously had. To ensure compliance, participants in the treatment group were instructed to delete all social media applications on their smartphone while the researchers observed. The treatment group experienced a decline in psychological well-being, including life satisfaction and perceived stress, compared to the control group. They concluded that although social media usage has been associated with negative effects, complete abstinence may not be the solution.

Hall et al. (2021) found no effect of social media abstinence on psychological well-being. Participants were randomly assigned participants to abstain from social media use for 0–4 weeks. Psychological well-being as measured through diary entry was not found to improve or decline for any of the conditions.

One consistent finding has been that complete abstinence from social media may not be sustainable for the average user. A less strict approach is to limit social media use by monitoring. Monitoring limited usage, as opposed to abstinence, may be more sustainable and practical.

Monitoring behavior has shown to be effective of mitigating negative effects in various contexts, such as improving children’s skills and efficacy (Schunk, 1982), academic performance of college students with attention-deficit/hyperactivity disorder (Scheithauer & Kelley, 2017), reducing effects of screen time (Gentile et al., 2014), and supporting weight loss goals (Burke et al., 2012). External monitoring is defined as another person holding a person responsible by monitoring their behavior; self-monitoring is defined as the individual themselves monitoring their own behavior and being held responsible by oneself (Mahoney, 1974).

To our knowledge, experimental studies investigating the effects of limiting social media on psychological well-being by limiting instead of complete abstinence are rare. Graham et al. (2021) found that limiting social media usage to 30 min per day led to an increase in psychological well-being over a time period of 1 week. They recruited 184 participants who were randomly assigned to either the treatment group or the control group. The treatment group was instructed to use Facebook, Instagram, and Snapchat for 10 min each, totaling 30 min a day. Participants in the treatment group were externally monitored by instructing them to send in daily screenshots showing the time spent on the three applications. The researchers found that limiting social media for 7 days to 30 min a day increased psychological well-being. Similarly, Hunt et al. (2018) limited social media usage to 30 min a day over a time span of 3 weeks for their treatment group and found a positive effect on psychological well-being, specifically through decreases in anxiety and FoMO.

These studies required intensive oversight by the researchers and effort on the participants’ part. A “true” self-monitoring effect (without external monitoring by a researcher) was not examined. Although the researchers in both limitation studies did find an increase in psychological well-being over the period of 7 days, it is unclear whether the increase in psychological well-being was due to the external monitoring of social media or a self-monitoring effect. In order to gain more knowledge about a true self-monitoring

effect, it would be worthwhile to examine a self-monitoring group compared to a control group.

Many of the extant studies of social media have included only one social media platform; however, modern social media users use multiple platforms regularly, each with different characteristics that could elicit different user effects. The focus on a single platform could be overestimating effects of that particular platform and missing effects that occur from typical multiplatform exposure. Facebook has been the single platform researched the most (Przybylski et al., 2013; Rosen et al., 2013; Song et al., 2014; Tromholt, 2016). In recent years, as more social media platforms have been developed, Facebook usage has generally decreased (Perrin & Anderson, 2019). Therefore, further research is needed to understand more typical multiplatform social media usage experiences.

To address the gaps identified above, the present study was designed to examine the effect of self-monitoring limiting social media usage on psychological well-being. Finding evidence that self-monitoring limiting social media usage improves psychological well-being could help policymakers and health professionals to design and implement more effective and practical ways to improve psychological well-being and quality of life for social media users. This study adds to the current research because most of the research on social media effects on psychological well-being has been correlational. A limited number of experimental studies has been conducted, but most have focused on a single platform, often Facebook (e.g., Przybylski et al., 2013; Rosen et al., 2013; Song et al., 2014; Tromholt, 2016), instead of experimentally investigating multiple social media platforms.

The present study also considers six dimensions of psychological well-being: anxiety, depression, FoMO, loneliness, positive affect, and negative affect. Anxiety and depression are dimensions of mental health. FoMO has been shown to predict lower psychological well-being levels, and as a reason for social media use. As psychological well-being decreases, individuals can be motivated to use more social media, subsequently increasing FoMO, leading to further decrease in psychological well-being (Blackwell et al., 2017; Oberst et al., 2017; Przybylski et al., 2013). Loneliness accounts for the social aspect of psychological well-being. Specifically, it is expected that participants who are instructed to limit their social media usage, and self-monitor whether they are adhering to the instruction, will have lower anxiety, depression, loneliness, FoMO, and negative affect, and higher positive affect, than a control group who is not instructed to change their social media usage.

Participants and Study Design

Students enrolled in the summer and fall semesters of 2021 at a large Midwestern university were invited to participate in the study. In order to participate, participants had to be over the age of 18, own a smartphone, and have at least one social media account. The institutional review board approved this study and was conducted consistent with the 1964 Helsinki declaration.

A total of 230 students participated; experimental group membership was 99 in the treatment group (limited, self-monitored) and 131 in the control group. The mean age of participants was 22 ($SD = 5.2$, range: 18–52), and 73% identified as female. The majority were native English speakers (84%) and were White (70% White, 16% Asian/Pacific Islander, 6% Latino/Hispanic, 3% multiracial, 1% African American, 4% other).

The study was a between-subjects design, with a recruitment target for each of the two groups to have at least 75 participants. This target was based on power analyses, calculated based on published results of the University of California, Los Angeles Loneliness Scale by Morahan-Martin and Schumacher (2003) on a similar population of college students. This study can be described as a short-term longitudinal experimental panel study.

Measures

Demographic Information

A set of questions assessed demographics for participants. For the purpose of subsequent linear regression modeling, gender was dichotomously operationalized as female or not (female = 1, else = 0), and race was dichotomously operationalized as White or not (White = 1, else = 0).

Social Media Usage

Social Media Platforms Used. Each participant was asked to select the top three social media platforms that they use from a predefined list. By giving participants the opportunity to choose their three most used social media platforms from a list of the most commonly used social media platforms, the study experience can be personalized. This way, participants limit the time on the social media platforms they use most.

Self-Reported Social Media Time. Social media time was measured by having all participants self-report their social media times in minutes for their three most social media applications at pretest.

Screenshot Social Media Time. Social media time was also assessed via screenshot of usage time from system wellness smartphone application summary interface. The screenshot displayed how many minutes per day the participant used the social media platform and provided a summary in minutes. Both groups were asked to provide a screenshot of their weekly usage time before and at the end of the study.

Psychological Well-Being

To operationalize psychological well-being, a battery of measures was used consisting of validated scales. Psychological well-being measures include assessing anxiety, depression, loneliness, FoMO, positive and negative affect. The main focus is on the psychological well-being constructs that have shown to be associated with social media usage in previous studies (e.g., Hunt et al., 2018; Kross et al., 2013; Przybylski et al., 2013; Reer et al., 2019; Sutarwoto et al., 2019).

Anxiety. Participants completed the Spielberger State-Trait Anxiety Inventory questionnaire pre- and postintervention (Spielberger et al., 1983; $\alpha = .92$). The measure is a common measure to evaluate anxiety symptoms and consists of two subscales. State anxiety can be described as anxiety in the moment, compared to trait anxiety, which describes general anxiety. For the present study, the 20 items for state anxiety were utilized. Agreements with statements such as “I am tense,” “I am strained,” “I feel calm,” and “I feel secure” were evaluated using a 4-point Likert scale, ranging from 1 (*not at all*) to 4 (*very much so*). Several items were reverse-coded such that higher scores indicate greater levels of anxiety.

Depression. The Center for Epidemiologic Studies Depression Scale (Devins et al., 1988; $\alpha = .90$) is a 20-item questionnaire used as an indicator of depression. Participants were asked to answer on a 3-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*more or all of the time*). Sample statements included “I felt hopeful about the future,” “I had crying spells,” and “My sleep was restless.” Four items that focus on positive statements were reverse-scored. After summing up the responses and calculating scores, scores can range from 0 to 60. Higher scores indicated greater distress and levels of depression symptoms. Published mean scores for a comparable sample of college students were 21.8 ($SD = 6.3$, $n = 175$; Devins et al., 1988). The standard cutoff point of 16 or greater is used to classify individuals with depressive symptoms (moderately depressed: 16–24 points; severely depressed: more than 25 points).

Loneliness. Loneliness was measured with the 20-item University of California, Los Angeles Loneliness Scale, Version 3 (Russell, 1996; $\alpha = .93$). Sample statements included “How often do you feel left out?” or “How often do you feel that people are around you but not with you?” The revised Version 3 included several reverse-scored items. Participants indicated their responses by answers on a 4-point Likert scale ranging from 0 (*never*) to 4 (*often*). Total scores can range from 20 to 80 with higher scores indicating higher levels of loneliness.

Fear of Missing Out. The Fear of Missing Out Scale (FoMOs; Przybylski et al., 2013; $\alpha = .84$) is a 10-item scale that measures FoMO. Participants were asked to rate statements such as “I fear my friends have more rewarding experiences than me” and “Sometimes, I wonder if I spend too much time keeping up with what is going on.” The items should be randomized before being presented and are rated on a 5-point Likert-type scale ranging from 1 (*not at all true of me*) to 5 (*extremely true of me*). Scores can range between 1 and 5 with higher scores indicating higher levels of FoMO.

Positive and Negative Affect. The Positive and Negative Affect Schedule (Watson et al., 1988; $\alpha = .88$ for positive affect and $.87$ for negative affect) consists of 20 items that describe feelings and emotions that measure positive affect and negative affect. Positive affect describes the tendency to experience positive emotions described with words such as “excited” and “proud,” while negative affect involves perceiving life in a rather negative way described with words such as “upset” and “afraid.” All items are rated on a 5-point Likert-type scale ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Total scores can range from 10 to 50 for both positive and negative affect with higher scores for each subscale indicating higher levels of that affective dimension.

Procedure

An email list of 34,837 unique student email addresses was obtained from the Registrar’s Office. Students on the list were sent an email invitation with information about the study and a link to the consent form and first online survey. The response rate to the email invitation was 2.95%. The purpose of the study was described to students as learning about “how different people use social media differently” and it was explained that the study would last 2 weeks. An incentive of participating in a raffle for five Amazon gift cards was offered as compensation. Upon completing the consent form, participants completed the demographics, social media usage (including submission of a screenshot of social media time), and psychological well-being measures. Participants were

given a link to a document with detailed instructions on how to access the system-installed social media wellness tracking app in their phones to upload screenshots.

Each participant was randomly assigned to either limit and self-monitor their social media usage (the treatment group) or a control group that was not instructed to change their social media usage. Random assignment was completed by a function of the online survey program during the pretreatment survey completion. After completing all pretreatment survey measures, specific study instructions were shown depending on the experimental group as follows.

Participants in the self-monitoring group were instructed to self-limit their social media usage for the next 2 weeks to 30 min per day in total for the three social media applications they indicated they use most. Participants were informed that they would be emailed a daily reminder to limit their social media usage to 30 min in total per day. Participants in the control group were not given any specific instructions. After the 2-week study period, all participants were sent an email link for the posttreatment survey.

Results

Data Analyses

All analyses were conducted in R 4.1.1 (R Core Team, 2020).

Descriptive Statistics

The study sample consisted of 230 participants; experimental group membership was 99 in the treatment group (limited, self-monitored), and 131 in the control group. The mean age of participants was 22 ($SD = 5.2$, range: 18–52) and 73% identified as female. The majority were native English speakers (84%) and were White (70% White, 16% Asian/Pacific Islander, 6% Latino/Hispanic, 3% multiracial, 1% African American, 4% other). For most participants (54%), both of their parents had a college degree. The majority used an iPhone (76%).

Pretreatment Social Media Usage

To estimate average daily minutes spent on social media, the average self-reported daily minutes for each of their top three social media platforms as part of the pretreatment survey were summed. The average total daily minutes of social media minutes were 195.4 (3 hr 25 min, $Mdn = 165$, $SD = 136.3$, range: 15–1,140).

Overall, the most commonly used social media platforms were Instagram, Snapchat, TikTok, YouTube, and Facebook (used by 22%, 21%, 15%, 14%, and 11% of participants, respectively; see Table 1).

Participants reported using TikTok for the highest average daily minutes ($M = 95$, $Mdn = 90$, $SD = 59$, range: 5–300). YouTube, Snapchat, Facebook, and Instagram were reported to be used for 87, 80, 59, and 57 min per day on average, respectively (see Table 1).

Pretreatment Psychological Well-Being

Psychological well-being assessed pretreatment indicated that many participants were anxious, depressed, and lonely. The mean anxiety score was 42 ($Mdn = 40$, $SD = 11$, range: 20–80; see Table 2). This means that 50% of the sample scored high enough to be considered to have clinically significant symptoms for anxiety (cut point of 39–40; Julian, 2011). Based on standard categorization

Table 1
Social Media Platforms Used

Platform	Used by %	Self-reported usage (typical minutes per day)	
		<i>M</i> (<i>SE</i>)	<i>Mdn</i> (range)
Facebook	11	59 (8.9)	30 (1–480)
Instagram	22	57 (4)	45 (8–480)
LinkedIn	2	23 (5.6)	20 (2–60)
Pinterest	3	28 (4.4)	22 (5–90)
Reddit	3	44 (7.5)	30 (5–180)
Snapchat	21	80 (6.7)	60 (5–500)
TikTok	15	95 (5.8)	90 (5–300)
Tumblr	1	41 (13)	50 (5–60)
Twitter	5	64 (11.3)	45 (1–360)
YouTube	14	87 (7.2)	60 (1–300)

Note. *N* = 230. *SE* = standard error.

of anxiety scale scores, the present study sample was 39% low anxiety, 26% moderate anxiety, and 35% high anxiety (see Table 3, for score cutoffs).

The majority of participants reported experiencing some degree of depressive symptoms pretreatment. Based on standard categorization of depression scores (Radloff, 1977), the present study sample was: 41% no depression, 39% mild depression, and 20% major depression (see Table 3 for score cutoffs). Although these percentages appear high, they appear to be consistent with observations that anxiety and depression increased during the COVID-19 pandemic.

A substantial proportion of participants reported experiencing high loneliness pretreatment. Based on the standard categorization of loneliness scores (Morahan-Martin & Schumacher, 2003), the present study sample was 56% normal and 44% high degree of loneliness (see Table 4 for score cutoffs).

Six indicators of psychological well-being scores were significantly correlated across all assessed dimensions (see Table 5).

Effect of Self-Monitoring on Psychological Well-Being

Self-monitoring limited social media use improved psychological well-being. Table 2 shows the estimated average scores for each psychological well-being dimension posttreatment for the self-monitoring and control groups. Figure 1 shows how estimated average scores compared between pre- and posttreatment (note

Table 2
Psychological Well-Being Dimension Scores

Variable	Pretreatment		Posttreatment	
	Control <i>M</i> (<i>SE</i>)	Self-monitored <i>M</i> (<i>SE</i>)	Control <i>M</i> (<i>SE</i>)	Self-monitored <i>M</i> (<i>SE</i>)
Anxiety	42 (1)	40.9 (1)	43.4 (1)	37.4 (1)
Depression	18.8 (1)	18.4 (1)	19.5 (0.9)	13.7 (0.9)
FoMO	2.6 (0.1)	2.5 (0.1)	2.5 (1)	2.3 (0.1)
Loneliness	45.4 (1)	45.4 (1)	45.3 (1)	42.2 (1.1)
Negative affect	21.8 (0.7)	20.8 (0.6)	22.3 (0.7)	18.1 (0.7)
Positive affect	31.6 (0.6)	31.8 (0.8)	31 (0.7)	33.1 (0.7)

Note. *N* = 131 (control), *n* = 99 (self-monitored). *SE* = standard error; FoMO = fear of missing out.

Table 3
Between-Group Differences, Psychological Well-Being Dimensions (Self-Monitored vs. Control)

Variable	Pretreatment <i>t</i>	Posttreatment <i>t</i>
Anxiety	0.77	4.2***
Depression	0.29	4.3***
FoMO	0.73	2.41*
Loneliness	0.03	1.97
Negative affect	1.1	4.23***
Positive affect	-0.23	-2.03*

Note. *N* = 131 (control), *n* = 99 (self-monitored). FoMO = fear of missing out.

* *p* < .05. *** *p* < .001.

that no between-group differences were found pretreatment, see Table 3).

To test the experimental hypothesis and determine whether average posttreatment well-being scores differed between the treatment and control groups, hierarchical regression models were tested where posttreatment score (“posttest”) was estimated as a function of treatment condition, controlling for covariates, including pretreatment psychological well-being (“pretest”), gender, age, and ethnicity. For each psychological well-being dimension that was assessed, the following two models were tested:

$$\text{Model 1: Posttest}_i = \beta_0 + \beta_2\text{Pretest}_i + \beta_3\text{Female}_i + \beta_4\text{Age}_i + \beta_5\text{White}_i + \text{error}_i, \quad (1)$$

$$\text{Model 2: Posttest}_i = \beta_0 + \beta_1\text{Treatment}_i + \beta_2\text{Pretest}_i + \beta_3\text{Female}_i + \beta_4\text{Age}_i + \beta_5\text{White}_i + \text{error}_i. \quad (2)$$

The standardized treatment effect coefficient estimates for each dimension of each model are presented in Tables 6–8. The results of these models indicate that self-monitoring limiting social media improved psychological well-being. Self-monitoring limiting social media usage lowered anxiety, depression, FoMO, loneliness, and negative-affect, and increased positive affect. The ranges of the confidence intervals of the coefficient estimates show that anxiety, depression, FoMO, loneliness, and negative affect were lower for the self-monitoring group than control, and positive affect was higher. None of the covariate coefficients were statistically significant (besides “White” for FoMO).

The results of the linear regression models indicate that self-monitoring limited social media use over the course of 2 weeks

Table 4
Pretreatment Psychological Well-Being Categories

Variable	Categories	Break points
Anxiety	39% low, 26% moderate, 35% high	<38, 38–44, >44
Depression	41% none, 39% mild, 20% major	<16, 16–26, >26
Loneliness	56% normal, 44% high	<47, ≥47

Table 5
Correlations Between Pretreatment Psychological Well-Being Dimensions

Variable	Anxiety	Depression	Loneliness	FoMO	Negative affect	Positive affect
Anxiety	—					
Depression	0.731***	—				
Loneliness	0.59***	0.716***	—			
FoMO	0.366***	0.392***	0.363***	—		
Negative affect	0.711***	0.757***	0.6***	0.421***	—	
Positive affect	-0.511***	-0.553***	-0.537***	-0.229***	-0.37***	—

Note. $N = 230$. FoMO = fear of missing out.
*** $p < .001$.

improved psychological well-being across multiple dimensions. More specifically, the levels of anxiety and depression, FoMO, loneliness, and negative affect significantly decreased, while the level of positive affect increased (Tables 6–8; Figure 1) for the treatment group, compared to the control group.

Discussion

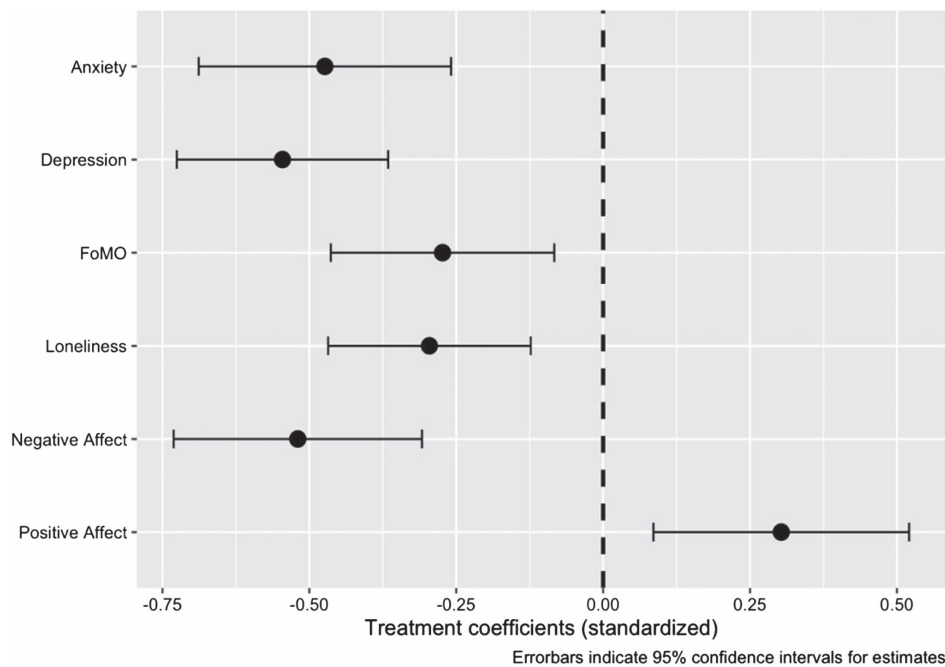
Social media usage has been linked with decreased mental health and well-being especially among college students (Hunt et al., 2018; Kross et al., 2013; Przybylski et al., 2013; Reer et al., 2019; Sujarwoto et al., 2019). Scholars have suggested different ways to mitigate negative effects on psychological well-being as a result of social media usage. Although some studies found that limiting social media can improve psychological well-being, most interventions have not been practical in real life. Many have required

submitting daily screenshots, deleting social media applications under supervision, downloading third-party applications, and researchers creating social media accounts to monitor participants' social media activity (Graham et al., 2021; Hall et al., 2021; Hanley et al., 2019; Hunt et al., 2018; Stieger & Lewetz, 2018). Therefore, the purpose of this study was to find a more feasible intervention using practical ways to examine the effect of limiting social media usage on mental health among college students. Specifically, it was hypothesized that self-monitoring limited social media usage would improve psychological well-being.

The results of the present study were consistent with the main hypothesis. After the 2-week experimental period, all assessed indicators of psychological well-being (anxiety, depression, FoMO, loneliness, negative affect, and positive affect) showed significant improvement for the treatment group compared to the control group, despite there being no differences between the groups at the pretest.

Figure 1

Pre- to Posttreatment Differences in Psychological Well-Being; Self-Monitoring Limited Social Media Use Improved Well-Being



Note. FoMO = fear of missing out.

Table 6
Linear Regression Models Predicting Posttreatment Anxiety and Depression (Standardized)

Predictors	Anxiety				Depression			
	Model 1		Model 2		Model 1		Model 2	
	β	SE	β	SE	β	SE	β	SE
(Intercept)	-0.167	0.137	0.058	0.141	-0.109	0.119	0.155	0.118
Pretest	0.592***	0.057	0.583***	0.054	0.717***	0.051	0.723***	0.047
Female	0.098	0.13	0.058	0.125	-0.077	0.116	-0.124	0.107
Age	-0.057	0.057	-0.055	0.054	-0.006	0.049	-0.006	0.045
White	0.068	0.13	0.084	0.124	0.045	0.113	0.061	0.104
Treatment			-0.474***	0.109			-0.546***	0.091
Adjusted R^2	0.352		0.404		0.496		0.57	

Note. SE = standard error.

*** $p < .001$.

These results indicate that self-monitoring limited social media usage can be a practical intervention for improving psychological well-being. This study is one of the first to implement a self-monitoring technique for social media usage limiting, which extends research in other domains that self-monitoring can be an effective technique (e.g., improving weight loss and academic performance; Burke et al., 2012; Scheithauer & Kelley, 2017). The results suggest that self-monitoring is a practical intervention that could be easier to implement in the “real” world.

The present study is one of the first to include multiple social media platforms and assess multiple dimensions of well-being (including a positive dimension). Previous studies have mostly examined one or a limited number of social media platforms and one or a limited number of well-being dimensions (Brailovskaia et al., 2020; Song et al., 2014; Vannucci et al., 2017).

The results of the present study could be considered consistent with the implications of the self-regulation theory investigated by Baumeister et al. (2006). Baumeister and colleagues describe self-control and self-regulation as effort an individual engages in to have control over their thoughts, feelings, and actions in their life. The present study did not investigate self-regulation. It can be speculated, however, that when participants executed self-control to limit their social media, this self-regulation improved their psychological well-being. Although it was found that self-monitoring limited social media usage improved psychological well-being, it is also true that self-monitoring is a demonstration of self-control. Given

the design of the present study, it cannot be determined to what extent the results were an effect of self-monitoring, limiting usage, or executing self-control. However, it is still notable that without requiring complete abstinence from social media, encouraging limited usage through a daily email reminder email can effectively decrease negative psychological well-being (and increase positive affect). From this study, we cannot determine the exact psychological mechanism(s) responsible for the changes in well-being and recommend future work to examine these hypotheses.

It is important to point out that whether participants limited their social media usage to the prescribed 30 min is not the critical aspect of this experiment. The critical aspect is that participants were trying to limit their social media usage. Even though many participants may have not been able to reduce their social media use to exactly 30 min every day, the intervention was still effective. Through qualitative comments from some participants, it can be speculated that some students were very strict with themselves while others mentioned that they were not able to keep up with the limit every single day. For instance, one participant mentioned: “It was hard during the first couple of days. Also, it is really easy and tempting to check what’s going on social media and go over the 30 minutes.” Another participant mentioned: “Time flew by, I didn’t notice that I used that much time and sometimes went over a little.” Yet, the self-limiting intervention worked, the effect was significant and had benefits for participants. One participant summarized: “I am going to keep the limit on my phone. For this Study I set the limits so I

Table 7
Linear Regression Models Predicting Posttreatment FoMO and Loneliness (Standardized)

Predictors	FoMO				Loneliness			
	Model 1		Model 2		Model 1		Model 2	
	β	SE	β	SE	β	SE	β	SE
(Intercept)	-0.418***	0.118	-0.284*	0.126	-0.113	0.11	0.017	0.114
Pretest	0.693***	0.05	0.691***	0.049	0.817***	0.045	0.817***	0.044
Female	0.051	0.113	0.022	0.112	0.051	0.103	0.03	0.1
Age	-0.003	0.049	-0.003	0.048	-0.019	0.044	-0.018	0.043
White	0.222*	0.11	0.236*	0.109	0.077	0.102	-0.054	0.1
Treatment			-0.273***	0.096			-0.296***	0.087
Adjusted R^2	0.492		0.509		0.621		0.64	

Note. SE = standard error; FoMO = fear of missing out.

* $p < .05$. *** $p < .001$.

Table 8
Linear Regression Models Predicting Posttreatment Negative and Positive Affect (Standardized)

Predictors	Negative affect				Positive affect			
	Model 1		Model 2		Model 1		Model 2	
	β	SE	β	SE	β	SE	β	SE
(Intercept)	-0.078	0.137	0.171	0.14	0.074	0.137	-0.064	0.144
Pretest	0.709***	0.06	0.696***	0.057	0.649***	0.057	0.652***	0.056
Female	-0.048	0.131	-0.108	0.125	0.048	0.131	0.072	0.129
Age	0.017	0.055	0.017	0.052	0.026	0.055	0.027	0.054
White	-0.01	0.127	0.022	0.12	-0.143	0.126	-0.162	0.124
Treatment			-0.52***	0.107			-0.303***	0.11
Adjusted R^2	0.411		0.471		0.381		0.401	

Note. SE = standard error.

*** $p < .001$.

wouldn't go over and I'm going to keep it. I felt more productive and in tune with my kids this past week."

Although encouraging, this study has limitations. Understanding possible mechanisms that could explain the observed effects is limited because detailed social media experience data were not collected. Ideally, accurate measurement of both social media time and content would be useful to understand to what degree social media exposure and what role social media content play in affecting psychological well-being. Second, some of the social media platforms that were specified to be limited by participants may not be accurately considered social media. This could mean that the observed effects were obscured or confounded because the effects of social media usage should be the result of social media. Limiting nonsocial media applications could have decreased the observed effect size. Next, this study was conducted during the COVID-19 pandemic in the late summer and early fall of 2021. This could have affected the psychological well-being that was observed across all participants and the importance of social media in a period of social isolation. Furthermore, the study was conducted with college students and therefore results may not be generalizable to a noncollege population. Additionally, the gender distribution in the study was 73% female, higher than 57% of the total university population. This may affect how much this study can be generalized to the university population as a whole. However, given that this study is an experimental study with random assignment, it can be assumed that both groups are equivalent for testing the hypotheses.

Although the current recruitment method of a self-selected convenience sample has the strength of not relying on a limited subject pool of participants in introductory courses, it is nonetheless still a convenience sample, just from a larger university student sampling frame. Random assignment was used, however, to ensure that the results were not due to self-selection biases.

It can be speculated that other mechanisms than solely limiting social media were at play in this study. Participants may have engaged in behaviors such as increased social connection or decreased social comparison through limiting social media. Previous research has shown that socially connecting with others and decreased self-comparison is correlated with increased well-being (e.g., Seppala et al., 2013; Tromholt, 2016). Future research should examine what people do with the time they gain from limiting social media use.

Based on the current findings and limitations, future studies should take a closer look at different potential mechanisms. Furthermore,

future studies could address motivations and feelings of research participants in qualitative explorations. This study addressed the research question of whether a self-monitoring approach to limiting social media usage can improve psychological well-being. Qualitative research would help to understand the mechanisms and motivations related to social media use to better understand the effects on psychological well-being. Following participants over a longer time period would inform whether those who were assigned to self-monitor their social media usage changed their behavior outside the immediate experimental setting, as many indicated they wanted to modify their social media usage going forward. It would be interesting in future studies to conduct a follow-up study to examine how the treatment effect on psychological being lasts over time.

Future studies may need to investigate more than just the exposure effects of social media use, such as context and content. It is reasonable to presume that not all social media content influences psychological well-being in the same way. Similarly, the context of use could also affect psychological well-being. For example, consider the possible differences in mindlessly scrolling popular posts, versus reading and commenting on controversial topics, or the difference between commenting on public posts versus instant messaging with friends and family.

Mitigation techniques based on limitation, such as used in this study, are a blanket approach to decrease exposure across all social media content which leaves gaps in understanding the nuance of content effects that future studies could address. This study has shown that limiting social media is a practical intervention for significantly improving psychological well-being and that there is strong interest among the college student population to improve their social media usage habits and awareness.

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