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# Social media reduction or abstinence interventions are providing mental health benefits – reanalysis of a published meta-analysis

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**Abstract**

A recent meta-analysis published in this journal included 27 studies that experimentally manipulated social media use and investigated their impact on mental health outcomes (Ferguson, 2024). The author concluded that social media effects were statistically no different from zero. However, this meta-analysis did not investigate potential moderating effects of length of social media reduction or abstinence interventions. We conducted a re-analysis to investigate the impact of social media reduction/abstinence intervention length on mental health outcomes. We used the information available on the Open Science Framework platform related to the original meta-analysis and excluded seven studies because they were not reduction/abstinence interventions. We categorized studies into those with intervention lengths of less than 1 week versus 1 week or longer and also tested for curvilinear relationships between intervention length (weeks and days as continuous variables) and outcomes by including quadratic terms. Stratified analyses indicated that interventions of less than 1 week resulted in significantly worse mental health outcomes (d = −0.175), while interventions of 1 week or longer resulted in significant improvements (d = 0.156). Analyses of intervention length as continuous moderator included 19 studies and showed significant quadratic effects for number of weeks (p = .013) and number of days (p = .018). These findings suggest that social media use reduction/abstinence interventions should have a minimum length of 1 week or longer to confer mental health benefits. An ideal

intervention length may be around 3 weeks, but future research is needed to confirm this.

**Public significance**

We conducted a re-analysis of a recent meta-analysis that was published in this journal and that concluded social media have no effects on mental health outcomes. We selected intervention studies that aimed at social media reduction or abstinence and investigated intervention length as a factor that may impact mental health outcomes. Findings demonstrated that social media use reduction / abstinence interventions of 1 week or longer conferred mental health benefits and suggested an ideal intervention length of around 3 weeks.

## Introduction

A recent meta-analysis included 27 studies that experimentally manipulated social media use and investigated their impact on mental health outcomes (Ferguson, 2024). The author concluded that meta-analytic pooled analyses indicated that social media effects were statistically no different from zero. However, this meta-analysis had several limitations. First, the meta-analysis combined studies that aimed at reducing or abstaining from social media as well as studies that experimentally manipulated other social media use behavior (e.g., passive or active use during short sessions). Moreover, the meta-analysis did not investigate potential moderating effects of length of social media reduction or abstinence interventions. If we apply concepts from the area of substance use disorders or behavioral addictions, it is conceivable that an initial impact of social media use reduction or abstinence may be experienced as aversive / negative – akin to experiencing withdrawal symptoms (Stieger & Lewetz, 2018). However, mental health and other outcomes may improve after an initial withdrawal period. While we recognize that the time course of social media use “withdrawal" is not well characterized in the existing literature (Fernandez et al., 2020), a previous intervention study in the area of problematic pornography use also used a substance use withdrawal analogy, and argued that withdrawal symptoms for behavioral addictions could also peak within the initial 7 days of treatment (Fernandez et al., 2023). Therefore, intervention lengths of one week or longer, compared to less than one week seem to be a useful initial

target for investigation. The current study built on this previous meta-analysis and the information published on the OSF platform and conducted a re-analysis. Our objective was to investigate the impact of social media reduction / abstinence interventions and analyze the moderating role of length of intervention.

## Methods

We used the information available on the OSF platform related to the original meta-analysis (https://osf.io/hv7us) and reviewed all included studies. Of the 27 originally included studies, we excluded 7 studies because they were not reduction / abstinence interventions (see online supplement). For example, these studies tested the psychological impact of short sessions of social media use (e.g., active vs. passive use; browsing vs. communicating) (Yuen et al., 2019). We extracted the length of intervention for all studies and categorized them into studies that intervened on social media use for less than 1 week vs. 1 week or longer (see online supplement). Moreover, we also tested intervention length as a continuous variable, using number of weeks as well as number of days as moderator and testing curvilinear relationships by including quadratic terms. All effect sizes were taken from the OSF platform. Random-effects models were estimated using the metafor package in R. Analyses were revised after acceptance of the commentary to reflect updates to the original dataset on the OSF platform on 10/02/2024.

## Results

We conducted an initial re-analysis of all studies included in the original meta-analysis and found an effect size of d=0.086, which was non-significant. After exclusion of the 7 studies that were not reduction/abstinence interventions, the remaining k=20 studies had an overall effect size of d=0.081 that was also non-significant. Of these, four studies had intervention lengths of less than 1 week, while 16 had lengths of 1 week or longer. When including the moderator variable of length of intervention (less than 1 week vs. 1 week or longer), the moderator was significant (d=0.333, SE=0.120, p=.006). Stratified analyses indicated that interventions of less than one week resulted in significantly worse mental health outcomes (d=-0.175, SE=0.068, p=.010), while interventions of one week or longer resulted in significant improvements in mental health outcomes (d=0.156, SE=0.065, p=.016). Analyses of intervention length as continuous moderator including quadratic terms to test curvilinear relationships were conducted based on k=19 studies that had fixed intervention lengths (see online supplemental materials). These analyses showed significant quadratic effects for number of weeks (b=-0.021; SE=0.008; z=-2.5; p=.013), as well as number of days (b=-0.000; SE=0.000; z=-2.4; p=.018). The curvilinear relationship between social media use reduction / abstinence intervention length in weeks and effect size on mental health outcomes is displayed in Figure 1.

**Conclusions**

Intervention length matters for social media use reduction / abstinence interventions and their impact on mental health outcomes. Interventions should have a minimum length of 1 week or longer to confer mental health benefits. Based on the results of our re-analysis, an ideal intervention length may be around 3 weeks. However, more studies of various intervention lengths are needed to confirm these findings and strengthen the evidence in this area of research, and studies need to balance intervention efficacy with feasibility and participant acceptability. Moreover, in the context of a rapidly changing social media landscape, more research is needed to investigate the impact of reduction / abstinence interventions on short form video social media platforms (e.g., TikTok, Instagram), that dominate the current market and may be associated with problematic use and negative mental health consequences (McCrory et al., 2022).

## Disclosures

The opinions and assertions expressed herein are those of the author(s) and do not reflect the official policy or position of the Uniformed Services University of the Health Sciences or the Department of Defense.

## Competing interests

None reported.

## Contributions

JT: Conceptualization; Supervision; Writing—original draft; Writing—review and editing

JD: Formal analysis; Writing—review and editing

DA: Validation; Writing—review and editing

TR: Validation; Writing—review and editing

SA: Writing—review and editing

CV: Writing—review and editing

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Figure 1: Plot of curvilinear relationship between social media use reduction / abstinence intervention length in weeks and effect size on mental health outcomes (k=19 studies)