# scientific reports



## **OPEN** The effects of social media abstinence on affective well-being and life satisfaction: a systematic review and meta-analysis

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Abstaining from social media has become a popular digital disconnection strategy of individuals to enhance their well-being. To date, it is unclear whether social media abstinences are truly effective in improving well-being, however, as studies produce inconsistent outcomes. This preregistered systematic review and meta-analysis therefore aims to provide a more precise answer regarding the impact of social media abstinence on well-being. The databases of PubMed, Scopus, Web of Science, Communication Source, Cochrane Library, and Google Scholar were searched for studies examining the effect of social media abstinence on three outcomes, namely positive affect, negative affect, and/or life satisfaction. In total, ten studies (N = 4674) were included, allowing an examination of 38 effect sizes across these three outcomes. The analyses revealed no significant effects of social media abstinence interventions on positive affect, negative affect, or life satisfaction. Relationships between social media abstinence duration and the three outcomes were also non-significant. The findings thus suggest that temporarily stepping away from social media may not be the most optimal approach to enhance individual well-being, emphasizing the need for further research on alternative disconnection strategies. Nevertheless, important methodological differences between studies should be considered when interpreting these results.

Social media are digital platforms that enable users to generate, share, and interact with content in a (semi-) public environment<sup>1,2</sup>. In today's digitally connected world, social media have become pivotal to the way people communicate, share information, and form relationships<sup>3-7</sup>. Despite the many benefits they bring, however, social media channels also come with certain drawbacks, as these platforms have the potential to evoke stress, induce feelings of missing out, and hamper people's concentration and productivity<sup>3,4,8</sup>. This causes individuals to get caught in a so-called "mobile connectivity paradox", leading them to experience conflicting feelings about the way social media can both elevate and challenge their autonomy at the same time<sup>4,9–11</sup>.

The solution to managing this ambivalent relationship might lie in applying techniques that allow people to disconnect from these social media platforms<sup>12</sup>. One example of such a technique is a social media detox, also known as "social media abstinence", which involves individuals taking a temporary break from social media for a designated period of time $^{13,14}$ . Over the past decade, taking such a social media break has become a popular digital disconnection strategy, that comes with the promise of improving one's productivity, health, and wellbeing<sup>15</sup>.

Over the past few years, several authors have investigated if this promise holds true by examining the effects of temporarily refraining from social media on well-being-related outcomes, such as life satisfaction, affect, loneliness, and perceived stress [e.g., <sup>16–20</sup>]. Interestingly, the results of these social media abstinence studies are inconsistent: while certain studies showed a positive impact, others reported a negative impact or no impact at all<sup>21</sup>. As a result, it remains uncertain whether temporarily abstaining from social media can benefit well-being.

The purpose of this study is therefore to provide a more concise answer on whether social media abstinences are effective in enhancing individuals' well-being, as recently called for by several authors [e.g., <sup>16,21</sup>]. To this end, we conducted a meta-analysis on the effects of social media abstinence on two specific indicators, namely life satisfaction and affective well-being, which are commonly used to measure individuals' subjective evaluation of their well-being<sup>22</sup>. This meta-analysis is among the first to focus on the relationship between abstaining from

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social media and individual well-being. To our knowledge, there is only one recent other meta-analysis, performed by Ferguson<sup>23</sup>. Ferguson's meta-analysis found no significant impact of interventions involving reducing social media use on mental health. This meta-analysis, however, combined two different intervention strategies (i.e., reducing social media use and totally refraining from using social media) under the term "reduced social media experiments" and examined the effect on an aggregated mental health outcome. Since there is currently limited knowledge on which outcome variables are affected by which particular disconnection strategies<sup>24</sup>, the current meta-analysis takes a more targeted approach by (1) solely focusing on interventions that required participants to *completely* abstain from the use of social media platforms, and (2) looking specifically at affective well-being (positive and negative) and life satisfaction as separate outcomes. In addition, this meta-analysis extends beyond Ferguson's study<sup>23</sup> by investigating whether the duration of a social media abstinence period is related to changes in affective well-being or life satisfaction.

## Social media abstinence as a digital disconnection strategy

In recent years, there has been growing interest among both scholars and practitioners in the topic of digital disconnection<sup>25,26</sup>, which according to Nassen et al. [<sup>25</sup>, p. 13], can be defined as "a deliberate form of non-use of devices, platforms, features, interactions, and/or messages that occurs with higher or lower frequencies, and for shorter or longer periods of time, after the initial adoption of these technologies, and with the aim of restoring or improving one's perceived overuse, social interactions, psychological well-being, productivity, privacy and/or perceived usefulness". Previous studies on digital disconnection have primarily revolved around understanding why individuals choose to disconnect from digital media [e.g.,<sup>27,28</sup>], the different strategies they use to disconnect [e.g.,<sup>10,14</sup>], and how effective these disconnection strategies are in improving individuals' well-being [e.g.,<sup>21,29</sup>].

Taking a temporary break from 'social media platforms' is one of the various strategies people can utilize to disconnect<sup>14,21,25</sup>. Social media platforms concern those applications that are built "on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" [<sup>2</sup>, p. 61]. They typically include elements such as a profile, an online social network, a content stream or 'feed', and some degree of users interacting with each other via public and private messages<sup>1</sup>. Well-known examples of social media platforms are Facebook, Instagram, Snapchat, and TikTok.

A so-called "social media abstinence" or "social media detox" can vary in duration and can include different social media channels and devices<sup>21,24</sup>. Important to this study is that, to differentiate it from merely *reducing* social media use, we define social media abstinence as an individual's voluntary and temporary decision to *completely* refrain from using one or more social media platforms on one or multiple devices. As suggested by Radtke et al.<sup>21</sup>, we extended previous digital detox definitions by incorporating the voluntary aspect, emphasizing that the social media break is self-imposed rather than externally forced by, for example, schools, parents, or governments. Also, we acknowledge that digital detoxes can include refraining from specific types of applications, such as social media applications, rather than from digital media use as a whole.

Recently, Nguyen<sup>24</sup> identified three key motivations behind people's decision to temporarily disconnect from social media. First, the author highlighted that individuals distanced themselves for reasons that are related to the uses and features of social media platforms (e.g., overload due to mindless and habitual smartphone use, lack of time and/or interest). Second, social influences, such as social pressure and privacy concerns, emerged as important motivations to disconnect from social media. Finally, the study revealed that one's situational context (e.g., work-life balance, life events) can also drive people to refrain from social media platforms.

## The effects of social media abstinence on well-being

Various studies have examined the effects of abstaining from social media on individual well-being [e.g.,<sup>16,17,19,30,31</sup>]. Although different explanations are given in this literature, they overall draw on the analogy with abstaining from substances (e.g., alcohol, drugs) or behaviors (e.g., gambling) that are commonly considered to be detrimental to one's well-being<sup>12</sup>. Similar to how avoiding these harmful substances and behaviors is found to enhance individuals' mental health<sup>32,33</sup>, it is assumed that temporary social media breaks can also shield individuals from the negative effects associated with its (excessive) use, thereby improving well-being<sup>34</sup>.

These supposed negative effects that social media abstinence shields from, then, concern a wide variety of harms, ranging from time displacement, over digital distraction, to exposure to harmful interactions and contents<sup>35</sup>. The time displacement hypothesis, for instance, suggests that taking a break from social media may encourage individuals to spend more time on activities that are deemed to be superior and therefore more beneficial for mental well-being, such as spending more time on offline relationships<sup>35–37</sup>. Another often-cited reason is that abstaining from social media prevents users from the negative upward social comparison effects evoked by exposure to '(picture) perfect' social media content [e.g.,<sup>31</sup>].

To date, however, few abstinence studies include a formal test of the harm mechanism(s) assumed to be tackled by a social media abstinence intervention<sup>38</sup>, with the exception of the social displacement effect for which limited evidence is found<sup>37,39,40</sup>. Most of the social media abstinence studies investigated more generally how the intervention impacts people's affective well-being, which refers to "the frequency and intensity with which people experience positive and negative affect" [<sup>41</sup>, p. 198], and is usually measured through the Positive and Negative Affect Schedule (PANAS)<sup>42</sup>. Positive affect is characterized by emotions like enthusiasm, alertness, and energy, while negative affect is associated with more unpleasant feelings, such as anger, fear, and guilt<sup>42</sup>. The findings of social media abstinence studies looking at positive and negative affect as outcomes are not clear-cut. Whereas Tromholt<sup>43</sup> observed that individuals' emotions become more positive after temporarily stepping away from social media, Wadsley and Ihssen<sup>20</sup> reported that a social media abstinence period lowered positive affect. Similarly, Vally and D'Souza<sup>44</sup> found that social media abstinence increased negative affect. Hall et al.<sup>16</sup>, Przybylski et al.<sup>40</sup>, and Stieger and Lewetz<sup>19</sup>, in turn, failed to find a significant influence on either positive or

negative affect. With regard to affective wellbeing, it is possible that the effects of social media abstinence are distinct for positive and negative affect. Therefore, we pose the following research questions:

RQ1. How does temporarily abstaining from social media influence positive affect? RQ2. How does temporarily abstaining from social media influence negative affect?

In addition to affective well-being, several social media abstinence studies have looked at the influence on life satisfaction, which refers to one's *"overall evaluation of their life"*, and is usually assessed using the Satisfaction with Life Scale (SWLS) [<sup>45</sup>, p. 71]. Similar to the studies examining affective well-being, the findings of the body of research examining the effects of social media abstinence on life satisfaction are inconclusive. While Allcott et al.<sup>30</sup> and Tromholt<sup>43</sup> demonstrated that refraining from social media positively influences people's life satisfaction, Vally and D'Souza<sup>44</sup> and Vanman et al.<sup>46</sup> highlighted that social media abstinence leads to a lowered life satisfaction. In contrast, Hall et al.<sup>16</sup> and Hanley et al.<sup>17</sup> did not observe any significant effects on life satisfaction. In light of these contradictory findings, we ask the following research question:

RQ3. How does temporarily abstaining from social media influence life satisfaction?

Finally, this preregistered meta-analysis will also examine the relationship between the duration of social media abstinence and the examined well-being outcomes. To the best of our knowledge, only Hall et al.<sup>16</sup> studied the influence of social media abstinence duration on well-being. In this study, no significant effects of the abstinence duration were detected for affective well-being and quality of day. Nonetheless, Radtke et al.<sup>21</sup> emphasized the need for additional research on potential moderating variables, including abstinence duration, to accurately assess the effectiveness of digital detox interventions. To respond to this call, we formulate the following research questions:

RQ4a. How is the duration of social media abstinence related to positive affect? RQ4b. How is the duration of social media abstinence related to negative affect? RQ4c. How is the duration of social media abstinence related to life satisfaction?

## Methods

This systematic review and meta-analysis followed the guidelines of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement<sup>47</sup>. The protocol of this study was preregistered in June 2023 on PROSPERO (ID: CRD42023428990) and was adjusted once in October 2023 to account for the varying types of social media abstinences that were encountered during the full-text screening. All materials needed to replicate this meta-analysis are available on the Open Science Framework (https://osf.io/nwj2u/).

## Search strategy

On May 6, 2023, searches were performed in the electronic databases of PubMed, Scopus, Web of Science, Communication Source, Cochrane Library, and Google Scholar. The search query was compiled together with the librarian of the University of Antwerp and consisted of terms related to social media (digital OR "social media\*" OR "social networking site\*" OR "social network site\*" OR SNS OR Facebook OR Instagram), abstinence interventions (abstain\* OR abstinence OR abandon\* OR avoid\* OR detox\* OR break\* OR vacation OR fast\* OR diet\* OR "give up" OR "giving up" OR without OR refus\* OR discontinu\* OR non-us\* OR resist\* OR sabbatical OR interrupt\* OR unplug\* OR "opt out" OR "opting out" OR quit), affective well-being (wellbeing OR well-being OR affect OR "positive affect\*" OR "negative affect\*" OR SWB OR MWB OR AWB OR DWB), and life satisfaction ("life satisfaction" OR "satisfaction with life"). For each database, the search string was slightly adapted to accommodate for technical differences (see Appendix A in Supplementary Material for the search strings and applied filters per database). There were no limitations for the searches in terms of language or publication year. After the initial searches, the reference lists of the included studies were searched to identify any additional studies.

We repeated the searches on December 20, 2024, in Web of Science and Communication Source, to identify any new studies that were published between May 2023 and December 2024. Two studies were found that initially seemed to meet our inclusion criteria but were eventually excluded. The study by Cervigón-Carrasco et al.<sup>48</sup> was not included as it focused solely on abstinence from instant messaging applications, unlike the other included studies that examined abstinence from (all, multiple, or one) social media application(s) or specifically mentioned that the use of instant messaging applications was allowed<sup>20,30</sup>. The study of Mikami et al.<sup>49</sup> was excluded because it targeted a specific population of participants, namely those with "elevated psychopathology symptoms, who perceived social media to negatively impact their life " (p. 1), and combined the social media abstinence intervention with information (including testimonials) on the benefits of social media abstinences, which diverges from the social media abstinence interventions that were examined among more general populations in the other studies.

## Inclusion and exclusion criteria

We included peer-reviewed studies on the effects of social media abstinence on affective well-being and/or life satisfaction that were written in English or Dutch, used an experimental or mixed-method design, and involved adults. Accordingly, we excluded papers that examined disconnection interventions other than social media abstinence (e.g., smartphone abstinence, reducing smartphone/social media use), outcomes other than affective well-being and life satisfaction (e.g., mental well-being), and/or focused on other age demographics (e.g., minors). Studies that were not peer-reviewed (e.g., opinion pieces, master thesis dissertations) or relied

on secondary data (e.g., systematic reviews, meta-analyses) were also not eligible for inclusion. There were no restrictions regarding where and when the study was conducted, the gender of the participants, the social media platform(s) the participants had to abstain from, the length and type of social media abstinence (e.g., smartphone only, all mobile devices, etc.), and the scales that were used to measure affective well-being and life satisfaction.

## Study selection and data extraction

The initial database searches yielded 5014 results, which were imported into the systematic review manager software Covidence<sup>50</sup>. After removing duplicates (n=762), the preliminary sample consisted of 4252 studies. Afterwards, two researchers independently screened the title and the abstract of each study based on the predetermined inclusion and exclusion criteria. Inter-rater reliability analysis using Cohen's Kappa was performed to determine consistency between the two independent raters ( $\kappa$ =0.69). The conflicts that were encountered during the title and abstract screening were resolved through discussion between the two screeners. Eventually, 17 studies were eligible for full-text screening. While conducting the full-text screening, the researchers encountered three additional studies in the reference lists that met the inclusion criteria, which were then included in the screening process. The full-text screening led to the exclusion of six studies (see Fig. 1 for exclusion reasons), resulting in a final sample of 13 papers.

Next, two researchers independently extracted the data from the included studies. Information about the study (e.g., authors, publication year, country), sample (e.g., size, age, gender ratio), methodology (e.g., design, outcome measures), and the social media abstinence intervention (e.g., length, type) were retrieved. Moreover, the means and standard deviations for the experimental and control group for between-subjects designs and the pre-and post-assessments including their correlations for within-subjects designs were extracted to calculate Hedges' *g* effect sizes. The authors were contacted if any of this information was not provided in the paper. Data could not be retrieved for two studies<sup>51,52</sup> and these studies were therefore excluded from this meta-analysis. Additionally, the study from Hall et al.<sup>37</sup> was excluded as it used the same dataset as one of the other included papers<sup>16</sup>. The final sample for this meta-analysis thus consisted of 10 peer-reviewed papers. Figure 1 displays the PRISMA flow diagram that provides an overview of the entire search and selection process.

## **Risk of bias assessment**

The risk of bias was evaluated using the Downs and Black checklist, which can be used for both randomized and non-randomized studies. This checklist includes 27 items in total, grouped into five different domains: (1) reporting, (2), external validity, (3) bias, (4) confounding, and (5) power<sup>53</sup>. Two researchers independently assessed the methodological quality of each included study by assigning scores ranging from zero to two for each of the 27 items. These scores were then summed to obtain a final score for each study. Subsequently, the final scores were compared between the two researchers and discussed to resolve any disagreements. A traffic light plot was then generated using the *robvis* tool, a web application that is designed to help researchers assess and visualize the results of their risk of bias assessment<sup>54</sup>.



**Fig. 1**. PRISMA flow diagram. This PRISMA flow diagram outlines the study selection process, showing the identification, screening, and inclusion of the studies, with reasons for exclusion noted at each stage. The final sample comprised ten studies in total.

## **Publication bias**

Several methods were used to assess the indications of publication bias. First, the contour-enhanced funnel plots for positive affect, negative affect, and life satisfaction were obtained and visually inspected. Next, Egger's test was conducted to examine funnel plot asymmetry for all outcomes<sup>55</sup>. Lastly, Duval and Tweedie's trim-and-fill procedure was carried out to estimate the number of studies that are missing due to publication bias<sup>56</sup>.

## Statistical analysis

Statistical analyses were performed in R (version 4.4.1) using the *esc, readxl, meta, metafor, tidyverse, devtools,* and *metameta* packages. Hedges' g effect sizes of the standardized mean differences were calculated for the three outcome measures and were preferred over Cohen's d because of the small sample sizes used in the included studies<sup>57</sup>. Effect sizes for studies using a between-subjects design were calculated using the *esc\_mean* function. For within-subject designs, pre-posttest correlations were taken into account to calculate the effect sizes<sup>57</sup>. If the pre-posttest correlation was unavailable for a certain study (k=1), a correlation coefficient of 0.5 was used as an estimate.

A random effects model using the Hartung-Knapp-Sidik-Jonkman method was used to calculate the pooled effect sizes<sup>58–60</sup>. Results were presented visually through a forest plot showing the individual and pooled effect sizes and 95% confidence intervals. Moreover, a sensitivity analysis was performed to examine whether excluding studies using a within-subjects design would affect the findings. Next, heterogeneity between the studies was assessed based on the  $\tau^2$  and  $I^2$  statistics. Studies that contributed to model heterogeneity were identified and displayed through a Baujat plot. Finally, a meta-regression was conducted to examine the relationship between the number of abstinence days and the outcome measures and was visualized using a bubble plot.

## Results

## Study characteristics

Table 1 provides an overview of the study characteristics of the ten included studies. These studies were mainly conducted in developed countries and were relatively recent, which is not unexpected given the fact that social media are relatively new digital platforms, and digital disconnection is a rather novel phenomenon. Most of the studies (70%) utilized a between-subjects design. Furthermore, four studies in our sample combined the experiment with an Ecological Momentary Assessment (EMA) approach. As for Open Science practices, less than half of the included studies were preregistered or had data that was publicly available.

The data from 4674 participants were extracted, of which approximately 65% were female. The sample sizes varied greatly between the studies and ranged from 35<sup>20</sup> to 2813 participants<sup>30</sup>. All studies used an adult sample and several studies specifically recruited students.

The social media abstinence interventions that were examined were usually short (range: 1–28 days), with seven days being the most common duration (k=6). The majority of the studies required participants to abstain from multiple social media platforms, with Facebook being the most prevalent one. However, the definition of social media was not entirely clear in some of the studies. Certain authors did not state, for example, whether instant messaging applications were also considered social media in their studies. In three of the studies, the devices that the participants were asked to abstain from were also not specified. The remaining studies asked the participants to not use social media on their smartphone and tablet/mobile devices (30%) or on all devices (40%).

Nearly all studies (k=9) assessed the extent to which participants complied with the social media abstinence intervention, either using self-reports (k=6), researcher monitoring (k=1), a combination of self-reports and researcher monitoring (k=1), or objective social media use measurements (k=1). Only Vanman et al.<sup>46</sup> did not specify in their study whether or how they monitored intervention adherence. The majority of the included studies reported a high level of compliance. Nevertheless, there were some notable exceptions. For example, Stieger and Lewetz<sup>19</sup> reported that 59% of participants visited social media at least once during the seven-day abstinence period, while Przybylski et al.<sup>40</sup> noted a compliance rate of 49.50% across their three experiments. On top of that, there was also a very low compliance rate in the study of Wadsley and Ihssen<sup>20</sup>, in which only 13.7% of the respondents managed to abstain from social media for a full week. The authors reported that "despite low compliance with the abstinence intervention, during the intervention phase participants did reduce their SNS use from baseline by an average of 83.40%" [<sup>20</sup>, p. 10].

This meta-analysis included a total of 38 effect sizes. In the study of Przybylski et al.<sup>40</sup>, the results of three independent experiments (using independent samples) are reported, allowing for the calculation of several effect sizes. Furthermore, Hall et al.<sup>16</sup> used an experimental daily diary design with the number of abstinence days as a condition. For this study, effect sizes for each condition (i.e. 7 days, 14 days, 21 days, and 28 days) were calculated separately. For both studies, the participants were thus included only once in the calculation of the effect sizes to ensure the assumption of independence was not violated.

## **Risk of bias**

The overall scores as well as the scores on the five different domains of the Downs and Black checklist are shown in Fig. 2. Overall, a total of seven studies scored "fair" (70%) and three studies scored "good" (30%) on the risk of bias assessment. More specifically, the included studies scored sufficiently on the reporting, external validity, bias, and confounding domains. With regard to the bias domain, the researchers noticed during the assessment that very few studies attempted to blind the researchers and none of the studies blinded the participants to the intervention they received. The latter is not surprising given that the participants themselves are a part of the social media abstinence intervention.

The majority of the studies also did not conduct a power analysis, resulting in low scores for most studies on the power domain of the Downs and Black checklist. Finally, before presenting the results of the meta-analysis,

Open data	Available online	Not publicly available	Not publicly available	Not publicly available	Available on OSF	Not publicly available	Not publicly available	Not publicly available	Available on OSF	Available on OSF	
Preregistration	Yes	No	Yes	0N N	Yes	No	No	No	No	Yes	quality of life pression scale
RoB assessment	Fair	Good	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	le, Q-LES-Q c studies dej
Range age	Not reported	Not reported	18–68	18-48	17-56	18–80	Not reported	18–27	18-40 <sup>a</sup>	18-25	h life sca emiologi al samule
SD age	11.9	4.2	11.4	7.1	3.8	11.9	8.7 <sup>a</sup>	2.03	Not reported	1.16 <sup>a</sup>	ction wit for epid
M age	32.5	24.8	26.8	30.9	20.8	27.4	34 <sup>a</sup>	22.1	22.4 <sup>a</sup>	19.9ª	atisfa center of for
Female (%)	57.6	50.0	78.5	55.1	73.7	70.0	86.0 <sup>a</sup>	52.6	63.0 <sup>a</sup>	68.6 <sup>a</sup>	SWLS s D Scale of
Inclusion criteria	US resident Born between 1900 and 2000 Use FB > 15 but < 600 min per day	Instagram account for at least one year Daily Instagram user 18 + years old	Not reported	English-speaking 18–48 years old Android users	Not reported	Adults	Not reported	Not reported	Active Facebook users	18–25 years old iPhone users Using at least one SNS daily	uffect schedule, ort form, CES- eir initial samr
Sample	Community sample	Students	Students Community sample	Adults	Students	Community sample	Community sample	Students	Community sample	Students	nd negative a schedule sh
z	2,813	80	130	78	297	152	888	78	123	35	tive al affect distrib
Outcome measure(s)	3 items from the SWLS	SWLS SWLS	4 items from the SF-36 3 items from Hughes et al. <sup>61</sup> + 1 additional item 4 items adapted from the SWLS	PANAS Q-LES-Q-18	PANAS	6 items from the I-PANAS-SF	4 items from the PANAS 5 items from the CES-D scale 1 item ("In general, how satisfied are you with your life today?")	PANAS SWLS	PANAS SWLS	6 items from the I-PANAS-SF	mework, PANAS position positive and mediative statistics and mediative statistics and mender of the sta
Outcome(s)	Life Satisfaction	Positive Affect Negative Affect Life Satisfaction	Positive Affect Negative affect Quality of Day	Positive Affect Negative Affect Life Satisfaction	Positive Affect Negative Affect	Positive Affect Negative Affect	Positive Affect Negative Affect Life Satisfaction	Positive Affect Negative Affect Life Satisfaction	Positive Affect Negative Affect Life Satisfaction	Positive Affect Negative Affect	oen science fra International renorted age
Type of social media abstinence	All devices	Smartphone Tablet	Not specified	All devices	Not specified	All devices	Smartphone Tablet	Mobile devices	Not specified	All devices	bias, OSF of I-PANAS-SF and Ibssen <sup>2</sup>
Social media platform(s)	Facebook (Messenger was allowed)	Instagram	Facebook Twitter Snapchat Instagram	Facebook Instagram	All social media	All social media	Facebook	All social media	Facebook	All social media, except instant messaging apps	RoB risk of stionnaire, od Wadsley
Duration of social media abstinence	28 days	7 days	7, 14, 21, or 28 days	7 days	1 day	7 days	7 days	7 days	5 days	6 days	acteristics. faction que
Country	United States of America	Italy	NSA	Australia United States of America United Kingdom	United States of America United Kingdom Hong Kong	Germany	Denmark	United Arab Emirates	Australia	United Kingdom	udy chara and satisf <sup>3</sup> Vanma
Study	Allcott et al. <sup>30</sup>	Fioravanti et al. <sup>31</sup>	Hall et al. <sup>16</sup>	Hanley et al. <sup>17</sup>	Przybylski et al. <sup>40</sup>	Stieger and Lewetz <sup>19</sup>	Tromholt <sup>43</sup>	Vally and D'Souza <sup>44</sup>	Vanman et al. <sup>46</sup>	Wadsley and Ihssen <sup>20</sup>	<b>Table 1</b> . St enjoyment <sup>aTromholt4</sup>

		Risk of bias									
		Reporting	External validity	Bias	Confounding	Power	Overall				
Study	Allcott et al. (2020)	-	-	+	-	+	-				
	Fioravanti et al. (2020)	+	-	+	+	+	+				
	Hall et al. (2021)	+	-	+	-	×	-				
	Hanley et al. (2019)	+	+	+	-	×	-				
	Przybylski et al. (2021)	+	+	-	-	+	-				
	Stieger & Lewetz (2018)	-	+	+	-	×	-				
	Tromholt (2016)	-	-	-	+	×	-				
	Vally & D'Souza (2019)	+	-	+	+	×	+				
	Vanman et al. (2018)	+	-	+	+	+	•				
	Wadsley & Ihssen (2023)	+	+	+	-	×	-				

**Fig. 2.** Traffic light plot visualizing the results of the risk of bias assessment using the Downs and Black checklist. This table summarizes the risk of bias assessment of the ten included studies across the five different domains of the Downs and Black checklist. Green circles indicate low concerns, yellow circles indicate some concerns, and red circles indicate high concerns.

it is important to point out to the reader that approximately half of the papers investigated potential adverse effects. Examples of adverse effects that were measured are loneliness<sup>20,30,44</sup>, boredom<sup>19,20,30</sup>, and craving<sup>19,20</sup>. These adverse effects might explain why several studies suffered from low compliance rates.

## Effect of social media abstinence on positive affect

In total, nine studies examined the effect of social media abstinence on positive affect, resulting in 14 effect sizes. The analysis revealed a non-significant pooled effect size for positive affect (g=0.03, 95%-CI=[-0.11; 0.16], p=0.69). Figure 3 shows the forest plot for positive affect.

The heterogeneity between the studies was substantial ( $\tau^2 = 0.04$ ,  $I^2 = 60.7\%$ , 95%-CI = [29.6%; 78.1%]) (see Fig. A1 in the Supplementary Material for the Baujat plot). A sensitivity analysis was carried out to determine if the removal of within-subjects design studies influenced the pooled effect size. After running the model with only the between-subjects studies (k=10), the non-significant pooled effect size of g=0.03 (95%-CI = [-0.11; 0.16], p=0.69) changed to a (borderline) significant pooled effect size of g=0.13 (95%-CI = [0.00; 0.27], p=0.047). In addition, a meta-regression was conducted to investigate whether the number of abstinence days influenced positive affect. The analysis revealed that the duration of social media abstinence did not significantly impact individuals' positive affect ( $\gamma=0.0032$ , SE=0.0103, p=0.76,  $R^2=0\%$ ). Figure A2 displays the bubble plot of this meta-regression for social media abstinence duration on positive affect (see Supplementary Material).

## Effect of social media abstinence on negative affect

The influence of social media abstinence on negative affect was investigated in nine studies, yielding 14 different effect sizes. The pooled effect size for negative affect was not significant (g=-0.01, 95%-CI=[-0.13; 0.10], p=0.78). Figure 4 displays the forest plot for negative affect. There was considerable heterogeneity between the studies ( $\tau^2=0.02$ ,  $I^2=63.7\%$ , 95%-CI=[35.6%; 79.5%]). Figure A3 represents the Baujat plot for negative affect (see Supplementary Material). Again, a sensitivity analysis was carried out to examine the impact of removing the studies using a within-subjects design on negative affect. Excluding the within-subjects studies for negative affect (k=10) altered the pooled effect size from g=-0.01 (95%-CI=[-0.13; 0.10], p=0.78) to g=-0.04 (95%-CI=[-0.19; 0.11], p=0.54). A meta-regression revealed no significant relationship between the number of abstinence days and negative affect ( $\gamma=-0.0056$ , SE=0.0088, p=0.54,  $R^2=0\%$ ) (see Fig. A4 in the Supplementary Material for the bubble plot).

## Effect of social media abstinence on life satisfaction

A total of 10 effect sizes were retrieved from six studies that looked at the impact of social media abstinence on life satisfaction. The pooled effect size for life satisfaction was not significant (g=0.03, 95%-CI=[-0.17; 0.22], p=0.75). Figure 5 visualizes the forest plot for life satisfaction. The heterogeneity between the studies was moderate ( $\tau^2$ =0.05,  $I^2$ =58.8%, 95%-CI=[17.1%; 79.5%]) (see Fig. A5 in the Supplementary Material for the Baujat plot). Furthermore, a meta-regression analysis did not demonstrate a significant association between

### Study Hedges' g 95% CI Weight Wadsley & Ihssen (2023) -0.54 [-0.87: -0.21] 7.2% Przybylski et al. (2021) - HK -0.17 [-0.40; 0.05] 9.5% Hall et al. (2021) - 21 days -0.16 [-0.68: 0.36] 4.4% Hanley et al. (2019) -0.12 [-0.56; 0.33] 5.4% -0.03 [-0.24; 0.19] Przybylski et al. (2021) - UK 9.7% Przybylski et al. (2021) - US -0.02 [-0.20; 0.16] 10.5% Hall et al. (2021) - 14 days 0.04 [-0.50; 0.57] 4.3% Vally & D'Souza (2019) 0.04 [-0.40: 0.48] 5.4% 0.05 [-0.10; 0.21] Stieger & Lewetz (2018) 10.9% Hall et al. (2021) - 28 days 0.11 [-0.41; 0.63] 4.4% Hall et al. (2021) - 7 days 0.23 [-0.28: 0.73] 4.6% Tromholt (2016) 0.26 [0.13; 0.39] 11.4% Vanman et al. (2018) 6.8% 0.34 [-0.02; 0.69] Fioravanti et al. (2020) 0.41 [-0.03; 0.85] 5.4% **Overall effect** 0.03 [-0.11; 0.16] 100.0% Prediction interval [-0.42; 0.47] Heterogeneity: $I^2 = 61\%$ , p < 0.010 0.5 -1 -0.5 1 Decreases positive affect Increases positive affect

**Fig. 3**. Forest plot for positive affect. This forest plot presents the Hedges' *g* effect sizes and 95% confidence intervals for individual studies investigating the impact of social media abstinence on positive affect. Each study is represented by a square, with the size of the square reflecting the study's weight in the overall analysis. The diamond at the bottom represents the overall effect size, while the line beneath the diamond symbolizes the prediction interval. Overall, there is a non-significant effect (*g*=0.03, 95%-CI=[-0.11; 0.16]), with substantial heterogeneity between the studies ( $I^2$ =61%, p < 0.01).



**Fig. 4**. Forest plot for negative affect. This forest plot presents the Hedges' *g* effect sizes and 95% confidence intervals for individual studies investigating the impact of social media abstinence on negative affect. Each study is represented by a square, with the size of the square reflecting the study's weight in the overall analysis. The diamond at the bottom represents the overall effect size, while the line beneath the diamond symbolizes the prediction interval. Overall, there is a non-significant effect (*g* = -0.01, 95%-CI = [-0.13; 0.10]), with considerable heterogeneity between the studies ( $I^2 = 64\%$ , p < 0.01).



**Fig. 5.** Forest plot for life satisfaction. This forest plot presents the Hedges' *g* effect sizes and 95% confidence intervals for individual studies investigating the impact of social media abstinence on life satisfaction. Each study is represented by a square, with the size of the square reflecting the study's weight in the overall analysis. The diamond at the bottom represents the overall effect size, while the line beneath the diamond symbolizes the prediction interval. Overall, there is a non-significant effect (g=0.03, 95%-CI=[-0.17; 0.22]), with moderate heterogeneity between the studies ( $I^2$ =59%, p<0.01).



**Fig. 6**. Contour-enhanced funnel plot for life satisfaction. This contour-enhanced funnel plot displays the distribution of Hedges' *g* effect sizes in relation to the standard error for social media abstinence studies looking at life satisfaction as an outcome. Each dot represents an individual study. The plot appears symmetrical, suggesting the absence of significant publication bias.

the length of social media abstinence and life satisfaction ( $\gamma = 0.004$ , SE = 0.01, p = 0.70,  $R^2 = 0\%$ ) (see Fig. A6 in Supplementary Material for the bubble plot).

## **Publication bias**

As previously mentioned, indications of publication bias were evaluated through a visual inspection of the contour-enhanced funnel plots, Egger's test, and Duval and Tweedie's trim-and-fill procedure. No asymmetry was observed in the funnel plots for any of the three outcomes (see Fig. 6 for the funnel plot for life satisfaction

and Figs. A7 and A8 in the Supplementary Material for the funnel plots for positive and negative affect). This was confirmed by Egger's test, which was not significant for positive affect (p=0.48), negative affect (p=0.18), and life satisfaction (p=0.29). Duval and Tweedie's trim-and-fill procedure added studies for all three outcomes. For positive affect, three studies were added, changing the pooled effect size from g=0.03 (95%-CI=[-0.11; 0.16], p=0.69) to g=0.12 (95%-CI=[-0.04; 0.27], p=0.14). For negative affect, six studies were added, modifying the non-significant pooled effect size of g=-0.01 (95%-CI=[-0.27; -0.01], p=0.04). For life satisfaction, three studies were added, altering the pooled effect size from g=0.03 (95%-CI=[-0.27; -0.01], p=0.04). For life satisfaction, three studies were added, altering the pooled effect size from g=0.03 (95%-CI=[-0.17; 0.22], p=0.75) to g=0.14 (95%-CI=[-0.08; 0.36], p=0.19). Considering the funnel plots and Egger's tests did not indicate any sign of publication bias in any of the outcome measures, and taking the non-significant results into account, we determined that the results from Duval and Tweedie's trim-and-fill procedure are not relevant.

## Discussion

## **Main findings**

The current systematic review and meta-analysis aimed at gaining a better understanding of whether social media abstinence interventions can promote well-being. To this end, we reviewed and analyzed studies that examined the impact of refraining from social media on positive affect, negative affect, and life satisfaction. Furthermore, we investigated whether and how these three well-being indicators are related to the duration of social media abstinence.

First, our study showed that temporarily refraining from social media did not have a significant impact on life satisfaction. As Vanden Abeele et al. [<sup>35</sup>, p. 4] already argued, it could be that temporary social media abstinences, which were mostly short-lived in the current meta-analysis, are not powerful enough to influence distal well-being outcomes such as one's overall, aggregated *life* satisfaction. Instead, it might affect lower-order variables that could over time impact these generalizable well-being outcomes, such as *day* satisfaction. To the best of our knowledge, however, only Hall et al.<sup>16</sup> and Przybylski et al.<sup>40</sup> examined the impact of refraining from social media on quality of day and day satisfaction, respectively, and both observed no significant effects. We advocate for future researchers to look into the relationship between social media abstinence and variables that measure well-being at the daily level by using intensive longitudinal designs, which are increasingly put forward as the preferred approach to examine the link between social media use and well-being<sup>62</sup>.

Nevertheless, this meta-analysis found no significant effects on either positive affect or negative affect, which are considered lower-order well-being variables. Concerning negative affect, it is possible that the mean scores for negative affect were already quite low at baseline, leaving more room for an increase in negative affect rather than a further decrease following a social media break. Another potential explanation for both positive and negative affect might be that the benefits and drawbacks of social media abstinence cancel each other out<sup>9</sup>: while individuals might feel more peaceful and connected to offline relationships after a temporary social media break<sup>14,63</sup>, they also might experience boredom or feelings of missing out<sup>19,24,40,44</sup>. However, we did not find any support for the coexistence of both greater positive and greater negative emotions after refraining from social media but rather found no meaningful changes in affect overall. While this observation does not rule out the possibility of a 'zero net-sum', a research design that is more sensitive to momentary experiences of potential ambivalence is recommended.

Lastly, the analyses revealed no significant associations between the *duration* of a social media break and the three outcomes. To date, there is limited research that looks at the relationship between social media abstinence duration and well-being<sup>16</sup>, making it difficult to provide a clear explanation for this finding. The vast majority of the included studies had a social media abstinence duration of approximately seven days, with only a few studies having considerably shorter (i.e., 1 day)<sup>40</sup> or longer (i.e., 14, 21, 28 days)<sup>16,30</sup> durations. As Stieger and Lewetz<sup>19</sup> already noted, refraining from social media for only seven days is likely not sufficient to influence one's well-being, which might also be the reason why the results were not significant for life satisfaction. Moreover, a lengthier social media abstinence might also increase the chance of experiencing drawbacks from it<sup>19,24,40,44</sup>. Hence, the direction of the effect of a longer-term social media abstinence on well-being could go both ways. Nonetheless, due to the limited number of studies examining longer abstinence periods and extended follow-up durations, we are unable to make definitive claims about the role of social media abstinence duration. More studies looking at longer abstinence durations and long-term effects of refraining from social media are therefore required to better grasp whether, how, and why the quantity and the quality of social media abstinence interventions may or may not be related to changes in individual well-being.

## Implications for the social media and mental health debate

What do these non-significant results now mean for the current debate surrounding social media, digital disconnection, and well-being? Taken together, this study indicates that abstaining from social media might not be the most effective method for individuals wanting to improve their well-being. This is an interesting finding in light of ongoing discussions over the impact of social media use on mental health<sup>64,65</sup>. An implicit assumption of those who believe this impact to be detrimental is that by abstaining from social media we might reverse its negative effect<sup>64</sup>. Our meta-analysis, however, suggests that abstaining from social media does not make you feel better; nor does it make you feel worse.

While the results of this meta-analysis mark an important point in the examination of the effects of social media disconnection on well-being, they are not conclusive. More research is needed to fully understand the nuanced and complex relationship between social media use and well-being, as well as the potential factors that might influence these outcomes. We recommend that this is best done through longitudinal designs in which person-specific effects are considered, as the impact of social media (dis)connection on well-being may vary significantly between individuals<sup>62,66</sup>. Ideally, this research considers relevant population characteristics upon

which the success of the intervention may be contingent. Researchers might examine, for instance, if having a more negative mindset towards social media<sup>67</sup> might result in greater effectiveness of a social media intervention. Similarly, it is important to take into account participants' intentions and/or motivations for engaging in social media abstinence studies, and whether participating in exchange for course credit or a (financial) incentive is truly voluntary<sup>35,38,40</sup>. It is possible that the effects of a researcher-imposed social media abstinence intervention may not fully align with those of a self-imposed social media break and thus may be influenced by individual motivations<sup>35,40</sup>. Lastly, research ideally operationalizes the specific harm mechanisms assumed to be tackled by the intervention; for instance, by measuring daily time expenditure (to examine displacement effects) and daily occurrences of negative upward social comparison.

## Limitations of the included studies and recommendations for future research

In reviewing the ten studies that were included in this study, we made several important observations that should be taken into account when evaluating our study findings. First, the sample of the included studies often contained a rather small number of participants. The majority of the studies also did not conduct a power analysis to determine the adequacy of their sample sizes. The statistical power for life satisfaction, positive affect, and negative affect in this meta-analysis is visualized in a firepower plot (see Fig. A9 in Supplementary Material), showing that all three outcomes yielded a very similar pattern, indicating low statistical power. It is possible that the studies included in this meta-analysis were underpowered to reliably detect small effects. Future studies should consider higher sample sizes to achieve the required sensitivity for measuring effects of social media abstinence.

Furthermore, the studies that were included in our meta-analysis were mostly conducted in Western countries and among students. As a result, we cannot generalize the findings of this study to other demographic regions and age groups. We therefore suggest that researchers examine the impact of social media abstinences on well-being among non- "WEIRD" samples (i.e., Western, Educated, Industrialized, Rich, and Democratic samples)<sup>68</sup>, as well as in different age groups (e.g., teenagers, elderly).

Several studies also did not specify which applications were considered social media applications and whether instant messaging applications were included in this definition. We advise future researchers to clearly define which applications are seen as social media. It could also be valuable to distinguish between "pure" social media applications and instant messaging applications when studying the impact of social media abstinence on individual well-being [e.g.,<sup>49</sup>], as the effects of their use may differ across these platforms.

Moreover, none of the studies blinded their participants, potentially leading to demand effects, where participants alter their responses based on their awareness of the study's purpose<sup>69</sup>. We acknowledge that blinding participants in a social media abstinence intervention, where the participants are involved in the intervention, is not feasible. Yet, we think that future researchers could try to address this issue by, for example, objectively measuring the outcomes, using log data or physiological data<sup>70</sup>, and perhaps also by deceiving participants about the true purpose of the study. A few studies also suffered from low compliance and only a limited number of studies in our sample objectively measured compliance rates. We therefore recommend that future researchers prioritize using objective methods to assess compliance, rather than relying solely on self-reported data. Finally, it is important to acknowledge that, although the included researcher-imposed social media abstinence studies offer valuable insights, they may not fully capture the dynamics of voluntary digital detoxes. As such, it is essential to consider the role of intentions and motivations when examining the effectiveness of social media abstinence interventions.

## Limitations of the current study

The current systematic review and meta-analysis is not without limitations. To begin with, the number of studies exploring the effects of abstaining from social media on affective well-being and/or life satisfaction was limited. As a consequence, we could not conduct any subgroup analyses because of the few included studies in our meta-analysis. Moreover, there was high heterogeneity between the studies, which was also observed in the meta-analysis of Ferguson<sup>23</sup>. In the current meta-analysis, the studies differed greatly in terms of the duration of the social media abstinence and the social media platforms and devices the participants were asked to abstain from. There was also some variation in the measurement of the outcome variables. Although most studies used the Positive and Negative Affect Schedule<sup>42</sup> to assess negative affect, there were few studies that used different measures for negative affect, including loneliness<sup>16</sup> and depression<sup>43</sup>. This should be carefully considered when interpreting the results of this study.

Regardless of these limitations, our systematic review and meta-analysis advance the field of digital disconnection by improving knowledge of the effectiveness of social media abstinence interventions. The results of this meta-analysis suggest that social media abstinence does not impact individual well-being. Temporarily abstaining from social media may therefore not be the most effective disconnection method for improving one's mental health. Nevertheless, we cannot ignore that public opinion continues to worry about smartphone and social media use and well-being. This underscores the importance of additional research into more nuanced disconnection strategies, such as reducing social media usage using device settings and/or applications<sup>71</sup>. These kinds of strategies could offer a more feasible and sustainable solution and might assist individuals better in their pursuit of digital well-being, attempting to find a balance between connection and disconnection in a manner that allows them to maximize the benefits of digital media applications, mastering this juggling exercise between connecting and disconnecting from smartphones and the associated social media applications will become ever more important. Therefore, we argue that more research on the effectiveness of other disconnection interventions is needed to better support people in maintaining a healthy relationship with these devices, which is essential given that the "smartphone is and will remain people's daily companion" [<sup>21</sup>, p. 208].

## Data availability

Data and the script for the analyses are available on https://osf.io/nwj2u/.

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## **Author contributions**

L.L., Y.V.Z., E.H.W.K., and K.P. designed the study. L.L. and M.M. were responsible for the screening of the studies. L.L. and Y.V.Z. collected and analyzed the data and performed the risk of bias assessment. L.L. wrote the first draft of the manuscript, which was critically revised by Y.V.Z., E.H.W.K., M.M.P.V.A., and K.P. All authors approved the final version of the manuscript.

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## **Declarations**

## **Competing interests**

The authors declare no competing interests.

## Additional information

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