



Review

Does social media use make us happy? A meta-analysis on social media and positive well-being outcomes

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ABSTRACT

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In social media use research on mental health, a comprehensive summary of the association between social media use and “positive” well-being in all its nuances, including different well-being indicators considered separately, is lacking. To fill the gap, we carried out a meta-analytic review of the literature by including 78 studies published between 2009 and September 2022. In our meta-analyses, we explored the association between social media use (time spent on using social media, active and passive use, communication, problematic use, social comparison, and other positive and negative experiences) and well-being (conceptualized as hedonic, eudaimonic, social, and other positive indices). Hedonic well-being, i.e., experiencing positive emotions and life satisfaction, was associated with social media communication ($r=0.11$) and positive online experiences ($r=0.21$) and negatively with problematic social media use ($r=-0.13$) and social comparison on social media ($r=-0.30$). Eudaimonic well-being, i.e., a sense of purpose and meaning, was only negatively related to problematic social media use ($r=-0.26$). Social well-being was positively related to social media time ($r=0.07$) and social media communication ($r=0.18$). Also, overall measures of positive well-being were associated with active social media use ($r=0.08$), communication through social media ($r=0.12$), number of friends ($r=0.14$), social media intensity ($r=0.21$), and other positive experiences ($r=0.19$). Conversely, social media comparison ($r=-0.30$) and problematic social media use ($r=-0.13$) showed negative correlations with positive well-being. The analyses add to our understanding of how social media may contribute to ill-being and well-being by disentangling positive from negative effects, and pave the way for interventions aiming at using social media to improve well-being.

1. Introduction

According to the World Health Organization (WHO), mental well-being is a state reached when “every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2005, p. 2). In media effects research, there are two broad conceptualizations of mental well-being (Meier and Reinecke, 2021): The *ill-being* perspective, including psychopathology, referring to mental health symptoms that cause distress in everyday life (e.g., depression and anxiety), and the *well-being* perspective, including hedonic well-being, which refers to the experience of positive emotions and life satisfaction, and eudaimonic well-being, which refers to a state beyond just happiness by including purpose and meaning and the

actualization of human potential by realizing one’s true nature (Ryan and Deci, 2000; Riff, 2018). Although a great amount of literature has already investigated the link between social media and well-being, well-being has usually been conceptualized as the absence of ill-being symptoms, like depression and anxiety, and positive conceptualization mainly referred to self-esteem and life satisfaction (Meier and Reinecke, 2021). Nevertheless, the absence of illness does not automatically reflect the presence of well-being (Keyes, 2005; VanderWeele et al., 2019). There is a lack of a comprehensive overview of the literature on social media use and well-being, conceptualized in a “positive” way in all its nuances, including hedonic, eudaimonic, and social well-being, separately. This lack of focus on positive outcomes should now be considered to balance the negative narrative on the possible adverse effects of social media use (e.g., Twenge, 2020; Twenge et al., 2018a, 2021). By mainly

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measuring ill-being, research risks neglecting the existence of positive effects of social media use. With this meta-analytic review, we aim to counterbalance this trend. In particular, we included studies investigating how social media use, time spent on social media, and different activities on social media, are related to hedonic (e.g., life satisfaction), eudaimonic (e.g., meaning), and social (e.g., having healthy relationships) well-being. Also, in the current meta-analysis, we considered how different socio-demographic and geographic variables (e.g., countries, age, gender) and conceptualizations of social media use (e.g., non-problematic vs problematic use) or well-being (e.g., hedonic versus eudaimonic vs social well-being) moderated the link between social media use and well-being. By doing so, we aim to show if and how social media use is related to positive well-being beyond the absence of ill-being. Based on our results, the discussion will focus on social media as an opportunity to promote well-being rather than diminishing it, thus informing practitioners, policymakers and the social media industry and guiding future interventions aiming to promote social media activities and features that can enhance well-being.

2. From ill-being to well-being in social media research

Public concerns about the effects of social media use on mental well-being have been raised broadly (Damour, 2020; Odgers, 2018; Twenge, Martin, et al., 2018; van Velthoven et al., 2018), with large-scale studies reporting lower happiness levels in heavy social media users (Twenge, 2019) and one ecological experiment showing that the introduction of Facebook across US college students lead to poorer mental health (Braghieri et al., 2022). At the same time, non-users often reported lower well-being levels than light social media users, suggesting that some degree of use is beneficial (Przybylski and Weinstein, 2017; Twenge, 2019). However, in the scientific literature on media effects, much consideration has been given to people's mental health symptoms, mostly in terms of depressive and anxiety symptoms and adverse outcomes of social media use (Bekalu et al., 2023; Meier and Reinecke, 2021). Hence, it is time to look at how social media use can also promote well-being, defined as "a complex construct that concerns optimal experience and functioning" (p. 141; Ryan and Deci, 2001), a research area that so far has been largely overlooked, as the majority of reviews and meta-analyses usually focused on ill-being indicators. Two distinct yet related traditions of research on well-being are worth noting: the "hedonic" and the "eudaimonic" perspective, two views rooted in ancient philosophy (Ryan and Deci, 2001). The hedonic perspective focuses on subjective well-being, defined as the intersection of life satisfaction (i.e., the cognitive component) and positive and negative mood (i.e., the affective component), which eventually determine happiness (Das et al., 2020; Ryan and Deci, 2001). On the other hand, the eudaimonic view (Haybron, 2016) focuses on psychological well-being, defined as a state beyond just happiness, as it includes actualizing human potential by realizing one's daimon or true nature. The eudaimonic view calls upon people to develop their potential by living according to their true selves. Consistent with Ryff and Singer's conceptualization (Ryff and Singer, 1998), it encompasses six dimensions of human actualization and self-expression (i.e., autonomy, personal growth, self-acceptance, life purpose, mastery, and positive relatedness). The two dimensions are distinct constructs (Huta, 2016; Joshanloo, 2016; Kopperud & Vitterso, 2008), yet positively related to each other (Delle Fave et al., 2011; Henderson and Knight, 2012; Huta and Ryan, 2010; King et al., 2006; Ryff and Singer, 1998). Also, comprehensive definitions of well-being have been offered, including the notion of "flourishing" (VanderWeele, 2017; VanderWeele et al., 2019), which mirrors the sense of growing and prospering, as well as the construct of "social well-being" (Keyes, 1998), which emphasizes well-being as the evaluation of social integration and functioning in society.

The attention to positive well-being conceptualization also derives from its link to physical and mental health (Boehm and Kubzansky,

2012; McMahan and Estes, 2011; Ryan and Deci, 2001; Steptoe et al., 2015; VanderWeele et al., 2020). For example, hedonic well-being triggers upward spiral dynamics, which promote healthy behaviors (Van Cappellen et al., 2018), reduce stress (Pressman et al., 2019), and foster longevity (Frey, 2011). In a similar vein, the daily experience of eudaimonic well-being is related to physical and mental health (Brandel et al., 2017), greater meaningfulness (Steger et al., 2008), healthier lifestyle (Trudel-Fitzgerald et al., 2019), lower levels of depression over time (Wood and Joseph, 2010), and less biological markers of distress later in life (Fredrickson et al., 2013; Ryff et al., 2004, 2006). Similarly, social well-being acts as a buffer in stressful situations (Holt-Lunstad, 2017; Kikusui et al., 2006), and good social relationships promote the experience of positive affect and reduce negative emotions (Cohen, 2004).

3. Summary of previous reviews and meta-analyses

Different mechanisms accounting for positive and negative effects on mental well-being are reflected in mixed results obtained in previous reviews of reviews (e.g., Dickson et al., 2018; Meier and Reinecke, 2021a; Odgers and Jensen, 2020a; Orben, 2020a; Valkenburg, 2022; Valkenburg et al., 2022). These meta-reviews are particularly informative, given the considerable number of reviews and meta-analyses to date (e.g., Elhai et al., 2017; Huang, 2020; Ivie et al., 2020; Keles et al., 2020; Lissak, 2018; Mac Cá�thaigh et al., 2020; Marciano et al., 2020; Marino et al., 2018; McCrae et al., 2017; O'Callaghan et al., 2021; Przybylski-Passal et al., 2016; Saiphoo et al., 2020; Saiphoo and Vahedi, 2019; Sunday et al., 2021; Vidal et al., 2020; Zink et al., 2020). Key previous reviews are summarized in Table 1. Also, large-scale studies showed that different effect sizes can be estimated based on the choice of well-being and social media measures. However, overall, the effects are small and explain less than 1% of the variance in well-being (Orben and Przybylski, 2019). Taken together, these reviews highlight some crucial points: (i) Results are mixed: The associations between social media use and well-being are weak; (ii) Most of the literature is focused on ill-being outcomes with some – limited – attempts to consider well-being dimensions. (iii) Well-being has been frequently defined as the inverse of or in combination with ill-being or by considering mainly self-esteem and life satisfaction as separate constructs, but no review considered a more comprehensive definition of well-being.

4. Social media use and dimensions of positive well-being

In addition, some reviews reported positive correlations between social media use and positive well-being dimensions. Using time spent on social media, Huang (2017) summarized results from 67 independent samples. They found that the mean correlation between social media time and psychological well-being (including both ill- and well-being indicators) was small ($r = -0.07$). It becomes nearly zero when involving positive indicators like self-esteem and life satisfaction. Liu et al. (2019) summarized 124 studies focusing on ill-being and well-being combined and found that calls and texting were positively associated with well-being. Further analyses pointed out that interactive, entertainment content, self-expression, and presentation were associated with better well-being than passively consumed content on social media, which was associated with worse well-being. Additionally, Huang (2021) meta-analytically summarized 98 independent correlations of the number of friends on social media with well-being and distress, showing weak positive correlations with well-being and non-significant associations with distress. Chu et al. (2022) conducted a meta-analysis with 38 empirical studies to examine the relationship between self-disclosure on social media and psychological well-being, finding that only the quality, including valence and honesty, and not the quantity, i.e., amount and depth, of self-disclosure on social media, were positively and moderately associated with psychological well-being; socio-demographics and cultural characteristics moderated

Table 1

Summary of previous systematic reviews.

Author and year	Summary
Dickson et al. (2018)	This review systematically mapped the existing literature reviews investigating the link between screen-based activities and the psychosocial health of children and young people, by summarizing the results of 82 systematic reviews published since 2014. The review considered specific screen-media activities, with the majority focusing on social media ($n = 19$), cyberbullying ($n = 19$), screen time ($n = 11$), problematic/addictive internet use ($n = 10$), gaming ($n = 8$), sexting ($n = 7$), Internet ($n = 6$) and smartphone use ($n = 2$). The most investigated mental health outcomes were depression, behavioral and pro-social conduct, self-esteem, well-being, life satisfaction, anxiety, self-harm, suicidal behaviors, and substance use. The 91.4% (75/82) of included reviews were mainly based on cross-sectional data. This review summarized the scientific evidence regarding young people from 2014 to 2019 by triangulating reviews and meta-analyses, large-scale cohort studies, and intensive longitudinal and Ecological Momentary Assessment (EMA) studies with a specific emphasis on the role of social media use on anxiety and depression. In the results, they found conflicting evidence, with a mix of small (positive and negative) associations with well-being, operationalized very heterogeneously in the studies. Some included reviews looked at constructs such as overall well-being, self-esteem, and life satisfaction in addition to depression, anxiety, and distress. The authors concluded that the included narrative reviews and meta-analyses could not support causal claims nor the presence of strong correlations between youth's digital media use and their ill-being or well-being.
Odgers and Jensen (2020a)	
Orben (2020a)	This narrative review updated the work by Dickson et al. with a literature search of additional systematic reviews and meta-analyses published the year after with a low risk of bias, for a total of 23 reviews. Looking at the effect sizes, correlations between social media use and well-being ranged from about -0.15 to -0.10 , indicating small negative effects. To note, some effect sizes were found in the opposite direction: Included meta-analyses showed that social media use increased social well-being, defined as social support and perceived social resources ($r = 0.12$). Thus, some social media use can positively influence social connectedness, although effects are contingent on users, timeframes, and contextual variables, rarely addressed by included studies.
Valkenburg et al. (2022)	This meta-review summarized the results of 25 reviews, including meta-analyses, systematic and narrative reviews on social media use and adolescent mental well-being. The majority of the included reviews reported "weak" or "inconsistent" associations. However, few studies reported "serious, substantial, or detrimental" associations. Interestingly, according to the authors, the definition of well-being varied greatly in the included reviews, ranging from being considered an aspect of mental health to perceiving mental health as a subdimension of well-being. Definitions included different heterogeneous outcomes like substance use, identity formation, social support, cyberbullying, and school performance. Although with great variability, meta-analytic summaries showed that social media use weakly correlated with ill-being (from $r = 0.05$ to $r = 0.17$) and well-being – including happiness and life satisfaction ($r = 0.05$). These results highlighted that ill- and well-being cannot be considered as each other opposite but as different facets that should be investigated separately.
Meier and Reinecke (2021)	This meta-review, including 34 reviews and a content analysis of 594 publications, summarized the overall meta-analytic evidence suggested a small negative association between social media use and mental health conceptualized using the ill-being framework. The authors clearly pointed out the importance of integrating the two continua of mental health, i.e., psychopathology and psychological well-being, into a coherent framework when studying social media effects. However, the only positive indicator used in their meta-analytic synthesis was life satisfaction, for which results varied according to the online activity. For example, life satisfaction was negatively related to screen time ($r =$

Table 1 (continued)

Author and year	Summary
	-0.05) or passive social media use ($r = -0.14$). When life satisfaction was combined with self-esteem, positive affect, and well-being, the association with social media use was positive but small ($r = 0.05$) and significant only for the number of social media friends ($r = 0.13$) or interactions (replying, commenting, liking) ($r = 0.14$). Included reviews and studies mainly reported positive associations with internalizing problems like depressive symptoms, stress, and lower self-esteem. Social media use was weakly related to depressive symptoms ($r = 0.23$), upward social comparison ($r = 0.33$), (social) anxiety ($r = 0.10$). Overall, a (very) small negative association was found (with r between -0.05 and -0.15) between all mental health measures and computer-mediated communication measures. When looking at specific indicators, Meier and Reinecke (2021) found a positive and consistent effect of social media use on social well-being, including social support and social capital ($r = 0.29$ overall) among the summarized meta-analyses. However, the authors did not meta-analyze affective and eudaimonic well-being outcomes.

the results. Valkenburg (2022) found 172 associations considering active or passive social media use with well-being or ill-being, respectively. They assumed that active participation, like posting and sending messages, would increase well-being or decrease ill-being by eliciting gratification, social support, and positive feedback from others. In contrast, passive activities like browsing or reading messages would decrease well-being due to social comparison and envy. Results partially supported both assumptions but were also heterogeneous and meta-analytic associations were small and in both directions. They emphasized that well-being is not just the opposite of ill-being, and they should be conceptualized separately on a continuum. A critical narrative review (Verduyn et al., 2017) of 28 studies investigating subjective well-being with social media use showed mixed results. Active social media use was positively related to social well-being, whereas passive use promoted social comparison and feelings of envy (Feinstein et al., 2013; Burke et al., 2020; Yang et al., 2018). However, the authors did not perform a meta-analysis. Similarly, another review (Duradoni et al., 2020) reported that six out of ten cross-sectional studies focused on the hedonic component of well-being in relation to (problematic) social media use, and only one (Satici and Uysal, 2015) investigated subjective happiness, subjective vitality, life satisfaction, and flourishing. Eventually, using a positive psychology lens, Gudka et al. (2021) conducted a systematic review to go beyond hedonic and eudaimonic well-being by identifying flourishing outcomes related to social media usage. Their review, including 118 studies with data from 26 countries, is a starting point to investigate and promote a proactive approach to social media engagement and support flourishing through social media activities. In particular, the results were summarized into different themes looking at the antecedents of flourishing (e.g., self-determination, individual differences, platforms design, social comparison, well-being, and usage) or at flourishing as the outcome (including dimensions such as relationships, engagement, meaning, identity, subjective well-being, optimism, and autonomy). By doing so, the authors reported initial suggestions on how social media use can be optimized to increase well-being.

Looking at how social media use can be related to eudaimonic well-being, Oliver (2022) suggested that content related to hope, arts, beauty, and gratitude can inspire users and augment eudaimonic well-being. Inspirational posts, including positive emotional words like awe, are also shared more with other users (Ji et al., 2019). Additionally, the creation of content allows users to fulfill their needs for self-expression, and the act of creating new digital media content can enhance user's levels of self-transcendence (Oliver et al., 2021). Witnessing inspiring content produces positive emotions that can ultimately contribute to the experience of kindness, compassion, love, and social-related outcomes like compassion, prosocial behaviors, and greater connectedness (Algoe

and Haidt, 2009).

5. Measuring social media use

Defining social media use is not easy, considering that social media platforms are changing rapidly. Social media use is part of computer-mediated communication (Bayer et al., 2020; Meier and Reinecke, 2021), and reviews usually include general concepts such as digital technology use, technology addictions, and different types of technology usages (Odgers and Jensen, 2020b), or relied on screen time measures only. Screen time is today part of education and communication with family and friends. Hence, screen time metrics are problematic since they do not consider the type of activities, motivations, needs, potential risks, and benefits. Also, screen time reports are prone to recall biases (Marciano and Camerini, 2022; Verbeij et al., 2021). Broader measures of screen-time can be considered to the extent to which screen time is interpreted as a sedentary lifestyle factor displacing time for more energy-consuming and health-promoting activities (Dickson et al., 2018). Similarly, rather than just sedentary, screen time might displace time for face-to-face interaction, possibly worsening mental health and psychosocial outcomes due to a less optimal quality of social interaction. However, the opposite can be argued, i.e., online interactions can foster social support and connection, including self-expression, and allow to maintain social ties when physical interaction is not possible (Marciano et al., 2022). In previous reviews, the terminology used varied from “digital media use”, “technology use”, and “social media use”, with little specifications on the undergoing activities. Devices such as smartphones are means to access entertainment content like movies, music, gaming, and social media platforms. However, the link between social media use and well-being depends on the operationalization of social media usage (gaming versus texting versus active/passive social media use) rather than the device to access a specific function. For example, according to Bayer et al. (2020), social media use can be described by looking at defined elements delineated by features and affordances common to different channels. The profile element allows users to digitally portray themselves in a personalized and creative way, writing bios, selecting profile pictures and backgrounds, and posting updates and photos. Through self-presentation, people might control what they present to others daily, the audience, and the time. Self-presentation can also be deceptive when it does not align with reality but contain discrepancy with the offline presentation. Thanks to social media networks, users can create, view, share, and comment on each other's content in a mutual (e.g., friendship) or unidirectional way (e.g., following). From that, a stream or flow of activity can be generated, including texts, reactions to posts and pictures, comments, and even suggested content or ads. Importantly, the message element (including different types of chat, texting, and instant messaging) can influence how social connectedness is perceived. Hence, social media communication includes new dimensions of connections and disconnection in which online and offline contexts merge. In the abovementioned reviews, measures used for describing social media use were general, and more nuanced definitions and constructs (e.g., type of activity carried out) are necessary to disentangle mixed results (Meier and Reinecke, 2021).

One way to overcome such “conceptual diversity” is to use a shared taxonomy of social media communication. Following the levels of analysis proposed by Meier and Reinecke (2021), we aim to define social media use using a technology-centered approach by defining the type of application (i.e., social media), the branded application (e.g., Facebook vs Instagram vs general social media use, according to the original study definition) and the features of the related channel (e.g., status updates, messaging, sharing, etc.). To describe the type of interaction, active and passive social media uses will be considered. Active social media use usually refers to all the activities that enhance content exchange with other people online, both interactively (e.g., messaging) and non-interactively (e.g., status updates). Active use also includes online self-presentation and self-disclosure, while passive use is non-interactive

communication where the user receives the communication or the content. Passive activities include passively scrolling through social media updates from others, watching stories or short videos, reading news, and consuming other entertainment content.

5.1. Social media use versus problematic social media use

Additionally, we want to address the difference between normal everyday use and problematic digital media use in estimating the link between social media use and well-being. Given that the constant access to digital media technologies and their everyday usage is considered a “new normality”, distinguishing digital media use from problematic usage behaviors is not easy (Pennay and Measham, 2016). The importance of defining the two concepts is shown in a cross-national study (Boer et al., 2020), which used data on intensive (i.e., excessive time spent on social media platforms) and problematic smartphone use (including experience of withdrawal symptoms, loss of control over and preoccupation with social media) from adolescents in 29 countries, and reported that only the problematic use was associated with lower levels of well-being (defined in terms of life satisfaction, psychological complaints, social and school well-being) in all countries. On a similar line, another study (Bekalu et al., 2019) emphasized that social media use as part of the everyday routine is positively associated with social well-being, positive mental health, and general self-rated health. In contrast, emotional connection to social media use, reflecting a strong attachment to social media activities, is negatively associated with overall well-being. Importantly, the time spent on social media is not a reliable predictor of problematic use since it explains only 6% of its variance (van den Eijnden et al., 2016). To note, problematic social media use refers to the frequent, excessive, and uncontrolled use of social media with specific features, including spending a lot of time on them, with unsuccessful attempts to reduce such behavior, reporting positive mood when being online, while the mood changes to negative during offline periods, and experiencing interpersonal problems (with family or friends, at work or school) due to the excessive social media use (Shaw and Black, 2008; Škarupová et al., 2016). Problematic social media use can start a cycle (Brand et al., 2019) and interrupt everyday activities, thus leading to poor mental health outcomes. This distinction is crucial, considering that some reviews included the two constructs in estimating the association with well-being (Valkenburg et al., 2022).

5.2. Other co-founding factors

Finally, the effect of factors that may possibly mediate or moderate the relationship between digital media use and psychological well-being should be further investigated to disentangle previous heterogeneity. Studies usually rely on nonrepresentative samples, thus limiting the possibility of generalizing results and overlooking how the effects might differ depending on the subpopulation under investigation. Most reviews are based on studies coming from conclusions being drawn almost exclusively from WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries, and only recently (Ghai et al., 2021, 2022), some reviews started to focus on population coming from the Global South. Social media effects have been found to be larger for younger and female users (Twenge et al., 2018b), but little evidence sustains such a result. Also, in the mapping review by Dickson et al. (2018) only few reviews addressed risk factors (6/82) or consequences (11/82) of the relationship between screen-based activities and mental health and, according to Meier & Reinecke(2021), effects depend on third variables (like moderators or mediators). Last but not least, study quality may influence the strength of the overall relationship (Orben, 2020b).

5.2.1. The current study

With the aim to fill previous literature gaps, we investigated, for the first time, how a positive conceptualization of well-being in all its dimensions is associated with different social media uses. To do so, we

carried out a comprehensive literature search and meta-analysis focused solely on positive indicators of well-being and social media use, conceptualized as both non-problematic and problematic use. Additionally, we investigated if the final results were moderated by other factors related to the study design, conceptualization of well-being and social media, and sample characteristics.

6. Methods

6.1. Search strategy

In April 2020, we conducted a comprehensive search strategy in titles and abstracts of six electronic databases: Medline (through PubMed), Web of Science (all databases), PsycINFO, EMBASE, ProQuest (all databases), and Annual Reviews. To be comprehensive, the first list of keywords used were very broad in nature and included social media-related terms (e.g., “social media use” and “social networking sites”) and the eight most popular social media platforms (i.e., Facebook, Instagram, YouTube, Twitter, WhatsApp, TikTok, Snapchat, and WeChat/Weixin) paired with health and well-being outcomes (e.g., “mental health”, “well-being”, “self-rated health”, “psychological well-being”, “subjective well-being”). Additionally, we searched Google Scholar using the same sets of search terms and examined the first 100 results from each search. Third, we examined the reference sections of reviews on social media use and health/well-being identified in the first round of search, and we also searched in the reference lists of the final set of articles included in our review. To cover all the articles published after April 2020 and to narrow the research, we conducted an additional systematic search in September 2022 covering all 2020, 2021, and partially 2022, in the same six databases. In this case, we focused on positive well-being outcomes combining the term “social media” with the following keywords such as “psychological well-being”, “hedonic”, “life satisfaction”, “happiness”, “subjective well-being”, “positive mental health”, “eudaimonic well-being”, and “social well-being”. The complete list of keywords is reported in [Table 2](#): the reported lists of search terms for well-being and social media use represent the exact terms that have been used in each database. Each list has been combined with the Boolean operator AND. In addition, interventions were excluded with the Boolean operator NOT. The same list of keywords has

Table 2
List of keywords (Systematic search 1 and 2).

Literature search 1	
Well-being	Social media use
health OR well-being* OR well-being OR self-rated health OR physical health OR mental health OR positive mental health OR subjective wellbeing OR psychological wellbeing OR social wellbeing OR depression OR distress OR happiness OR emotions OR positive emotion*OR negative emotion* OR purpose in life*	social media use* OR social media OR social networking site* OR Facebook OR Instagram OR YouTube OR Twitter OR WhatsApp OR WeChat OR Weixin OR Snapchat OR Tiktok
Literature search 2	
Positive well-being	Social media use
life satisfaction OR satisfaction with life OR happ* OR subjective well* OR positive mental OR eudaimon* OR hedon* OR social well* OR positive emotions OR positive affect OR autonomy OR personal growth OR self-acceptance OR meaning of life OR flourish* OR authenticity OR self-acceptance OR positive relationships OR life purpose OR thriving OR ryff* OR positive mental health OR psychological well-being	Social media OR social network site* OR Facebook OR Instagram OR YouTube OR Twitter OR WhatsApp OR TikTok OR Snapchat OR WeChat

been applied to all included databases.

We imported all entries in Zotero to exclude any duplicates. Next, two authors (JL and TS) independently coded the articles. Coders' agreement was evaluated by double coding 30% of the final set of articles and calculating Krippendorff's alpha for this subset encompassing all categories of well-being. All discrepancies and issues during the coding process were resolved through discussion between the two coders and a third author (LM). The review has not been registered in PROSPERO.

6.2. Inclusion and exclusion criteria

A study was included in the meta-analysis if it (i) was published in a peer-reviewed journal, (ii) in English, (iii) included a measure of social media use and/or problematic social media use combined with (iv) a measure of positive well-being, and (v) a result convertible into an effect size (i.e., correlations, regression coefficients or odds ratios, or mean differences with standard deviations). Studies investigating ill-being, physical health, cognitive well-being, consumer behavior, learning, job contents, scale development, marketing, cyberbullying, dating, sexting, using social media to deliver interventions, and clinical populations were excluded. Inclusion and exclusion criteria were evaluated at title, abstract, and full-text screening. In particular, inclusion criteria iii, iv, and v were finally checked at the full-text level. Since previous reviews underlined that the quality of studies might be an issue in the evaluation of social media effects, to avoid including studies of poor quality or not peer-reviewed (e.g., pre-prints) or possible duplicates of results from conference papers and book chapters, we decided to include only studies published in peer-reviewed journals. Thus, pre-prints, conference papers, and book chapters were excluded. When effect sizes were not available, we tried to contact the authors requesting the original data.

6.3. Data extraction and preparation

For each article, two authors (JL and TS) extracted the following information, which were checked by a third author: Journal and study title, country where the study was conducted, study design (i.e., cross-sectional, longitudinal, or using EMAs), the study length of longitudinal studies, methods for data collection (e.g., online vs offline survey), number of participants (i.e., analytical sample), type of sampling procedure (i.e., convenient vs random sampling), % of male participants, mean age of participants and age group (i.e., adolescents - up to 18 y.o. - vs young adults - from 18 to 35 y.o. - vs adults – 35 y.o. or older), use of theory, type of social media platform investigated (e.g., general social media use vs Facebook vs specific social media platforms), how social media use has been conceptualized (non-problematic vs problematic), type of activity for non-problematic social media use (e.g., active, passive, communication, etc.), the measure used to assess social media use (e.g., validated scale or not), number of items and reliability, how positive well-being was been conceptualized (e.g., hedonic, eudaimonic, social, mixed, other), type of well-being construct (e.g., life satisfaction, happiness, meaning, social connection, etc.), the measure used to assess positive well-being, number of items and reliability, and the effect size (e.g., correlations, betas of regression coefficients). When a study used a longitudinal design, we collected information on social media use at Time 1 and well-being at Time 2. When a study used an intensive longitudinal design (like EMAs), we reported only between-person associations.

7. Methodological quality assessment

Two raters evaluated the studies' quality independently (JL and TS) and a sum score was created, with a higher score indicating better methodological quality. In particular, we used the STROBE checklist ([Cuschieri, 2019](#)), which includes an evaluation of 22 points

summarized in six categories: (i) title and abstract, (ii) introduction (including background and objectives), (iii) methods (including study design, setting, participants, variables, and measurement, bias, study size, quantitative variable, and statistical methods), (iv) results (including participants, descriptive data, outcome data, main results, other analyses), and (v) discussion (including key results, limitations, interpretations, generability), and (vi) other information like funding. For each paper, we rated if each criterion of the quality assessment was 0 = “absent”, 1 = “partially met”, 2 = “completely met”. If a criterion was not applicable, we labeled it as NA = “not applicable”. Then, we calculated a sum score of all criteria. The maximum score obtainable was 44. Any doubt was solved through a consensus meeting with a third author (LM).

8. Meta-analytic procedure

The meta-analysis was carried out using the “meta” (Schwarzer et al., 2015) package in R statistical software, Fisher’s r-to-z transformation was used as a measure of effect size and results transformed back to r correlation coefficients for simpler interpretation. When necessary, we converted standardized beta coefficients to correlation coefficients (Peterson and Brown, 2005), and the “esc” package was used to convert raw data into effect sizes when needed (Lüdecke, 2019). We interpreted the pooled effect according to the recommendations by Funder and Ozer (2019) for psychological research as “very small” = 0.05, “small” = 0.10, “medium” = 0.20, “large” = 0.30, and “very large” = >0.40. To control for studies’ diversity, each meta-analysis was run using the inverse-variance method with a random effects model and Hartung-Knapp-Sidik-Jonkman adjustment (IntHout et al., 2014). We calculated the heterogeneity of the effect sizes with the between-study-variance τ^2 , using the restricted maximum-likelihood estimator (REML) (Borenstein et al., 2010; Higgins et al., 2003; Ried, 2006). The inconsistency index (I^2), reflecting the amount of studies’ heterogeneity, was interpreted as low (25%), moderate (50%), and high (75%), according to Higgins et al. (2003). As a sensitivity check, we carried out influence analyses (using the leaving-one-out method) to explore if the exclusion of a particular study reduced the heterogeneity of the pooled effect considerably. Potential publication biases were explored graphically via funnel plots and statistically with Egger’s regression tests for funnel plot asymmetry (Egger et al., 1997). First, we investigated how different social media activities were related to diverse positive well-being measures. Then, sub-group analyses were run to explore studies’ heterogeneity with respect to different moderators. We considered the context like the country/continent (i.e., US and Canada vs Australia and Asia vs Europe vs Middle East vs Global South vs Multi-countries), socio-demographic factors like age (i.e., adolescents vs young adults vs adults or older), the type of sampling procedure (convenient vs random), and population type (middle/high schools, vs college students vs social media users vs other vs not specified), and methodological aspects like the type of social media use (i.e., general social media, without specifications, specific social media platforms like Facebook), the type of social media and well-being measure (if it was created ad-hoc, adapted or validated), and the percentage of missing data in the analysis (<10% or more). Meta-regression analyses were used to explore if gender (coded as the percentage of male participants) influenced the final effect. To avoid the possibility to overlooked possible positive effects on well-being (that can guide future research and show where more studies are needed), we run meta-analyses when at least 3 effect sizes were available. Additionally, when possible, for the estimation of effect size, we considered beta coefficients, controlled covariates like gender, age, or others in each study.

To note, only one effect size from the same study was used in each meta-analysis (i.e., if a paper was reporting more than one construct of interest, we included only one association from that specific study, however the same study could be part of another meta-analysis looking at a different association). When more than one effect size was available

for the same construct, we selected only one that aligned with the construct of interest or averaged the effects of two similar constructs before entering the raw data in the analysis. This procedure allows us to avoid problems of dependency of effect sizes.

9. Results

The screening process of the included studies is reported in the PRISMA flowchart (Fig. 1). The initial search in titles and abstracts from the six databases and Google Scholar yielded a total of 10,457 references. After removing duplicates ($n = 971$), 9486 references remained. Two coders screened the titles and then abstracts of studies independently and, based on inclusion and exclusion criteria, reduced the number to 213, to which 20 were added by looking at the reference lists of review and included articles. So, the process of Research 1 identified a total of 233 articles, of which 84 focused on positive well-being outcomes and social media use.

The additional systematic search carried out in September 2022 covering 2021, and partially 2022 identified 396 other articles, which were reduced to 271 after the removal of duplicates ($n = 125$). At the title and abstract level, 206 articles were excluded, ending in 65 articles to be retained for full-text screening. In total, 149 articles from Research 1 and Research 2 combined were screened at the full-text level to mainly check for inclusion criteria iii, iv, and v. At this stage, we excluded 71 articles for the following reasons: 16 were not focused on well-being measures but used, for example, composite scores of ill-being and well-being or ill-being constructs, 4 articles did not measure social media use, 24 did not have a result convertible into an effect size (e.g., structural equation modeling results), 25 were in retrieved in the format of conference papers, book chapters, or the full article was not available online, finally two papers have a different study design (review and intervention paper). Finally, 78 research articles were included in the meta-analysis. At all stages of the review, if the two reviewers made a different determination about any of the articles, they consulted a third reviewer to resolve the discrepancy and made a final determination. To calculate coders’ agreement, Krippendorff’s alpha for a subset of studies ranged from a low of 0.70 to a high of 0.97.

9.1. Characteristics of the included studies

Of the 78 included studies, fifteen (19%) were longitudinal, and four (5%) used an intensive longitudinal design (in which multiple assessments are carried out intensively during a day) with EMAs, whereas the remaining 59 (76%) were cross-sectional. Longitudinal studies lasted from one month (Awao et al., 2022) to four years (Boer et al., 2022), with an average length of 17.2 months. Studies using EMA usually lasted few weeks. Twenty studies (26%) were conducted in North America (including the U.S. and one in Canada), 21 (27%) in Asia and Australia, including China ($n = 10$), Australia ($n = 5$), South Korea ($n = 2$), Taiwan ($n = 2$), Vietnam ($n = 1$) and Malaysia ($n = 1$). Twenty-three (29%) studies were from Europe, including the Netherlands ($n = 7$), United Kingdom ($n = 3$), Italy ($n = 2$), Spain ($n = 2$), and one from Poland. Additionally, eight studies (10%) were from Middle East countries such as Turkey ($n = 5$), Lebanon ($n = 16$). Additionally, one study collected data in Pakistan (Raza et al., 2020), one in Algeria (Abiddine et al., 2022) and one in Mexico (Ostic et al., 2021). Three studies included data from multiple countries (Boer, van den Ejnden et al., 2020; Boniel-Nissim et al., 2022; Lönnqvist and große Deters, 2016).

Sample sizes ranged from 44 participants (Berry et al., 2018) to 190, 089 (Boniel-Nissim et al., 2022), with a median of $n = 461$. Additionally, 47 studies (60%) collected data online, 15 (19%) in schools, two studies (0.03%) used both online and offline settings, and the remaining 14 did not report any information on data collection modality. Most of the studies ($n = 62$, 79.5%) used convenience sampling, 16 (21.5%) studies drew on probability-based sampling, and four studies did not report any information on the sampling procedure.

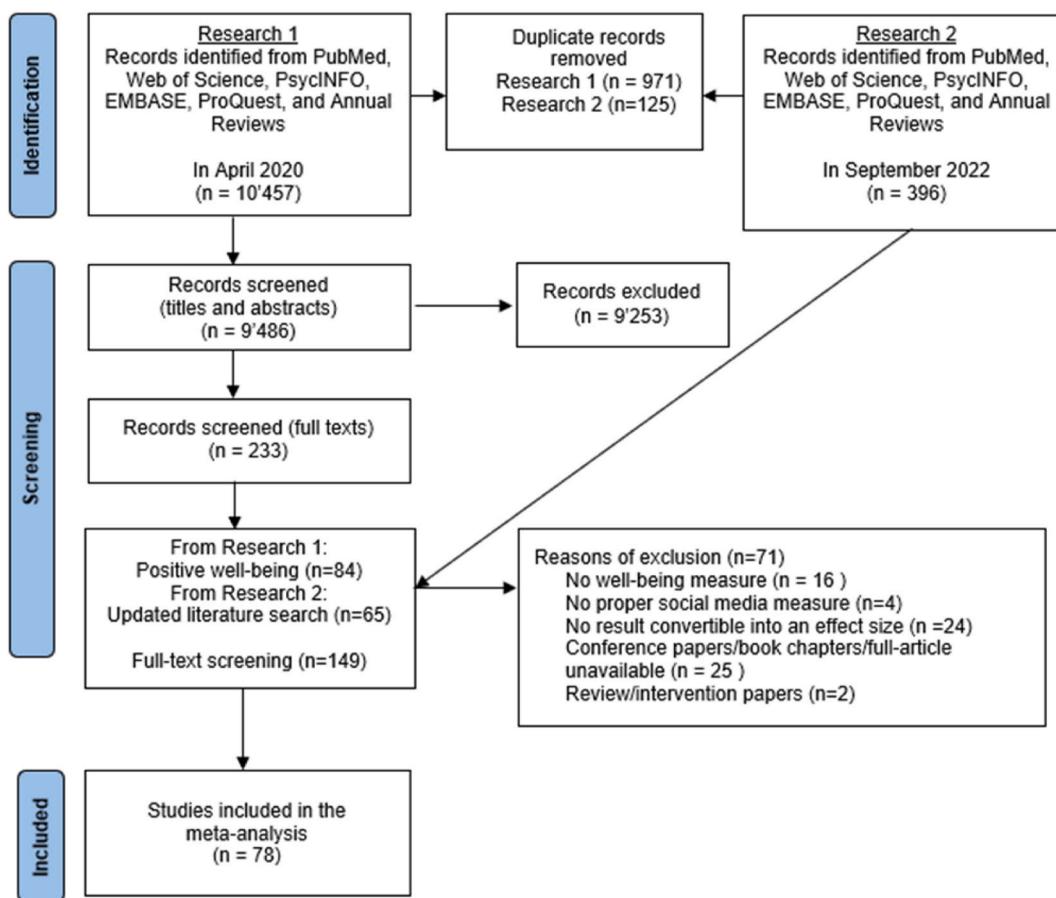


Fig. 1. PRISMA flowchart of the selection process.

Across studies, the percentage of male participants ranged from 15.3% (Grieve et al., 2013) to 67% (Brooks, 2015), with a median of 44%. Twenty-three studies looked at adolescent populations (29.5%), 37(47%) included young adults (between 18 and 35 years of age), fourteen studies (18%) focused on adults older than 35 years – of which two studies showed an average age higher than 70 years (Kim and Fingerman, 2022; Simons et al., 2022), and four studies omitted information on participants' age. Also, 24 (31%) studies collected data from college and university students, 18 (23%) from middle and high school students, and 15 (19%) from other populations, including social work graduates, community-dwelling adults, migrant factory workers, new urban migrants, households/panel members, and 16 (20.5%) studies described participants as social media users, the remaining five did not report additional information. Also, only 29 studies (37.2%) reported information on race and ethnicity of participants.

With respect to the type of social media measures, 38 studies (49%) used only validated questionnaires (in some cases with some contextual/language adaptations), 24 (31%) used only ad-hoc measures specifically developed for the study purpose, and the remaining 16 studies (20%) used both validated and ad-hoc measures. Among all the studies, the majority (n = 67, 86%) included only validated measures of well-being, whereas six studies (8%) used only ad-hoc measures, and the remaining five used a mix of both. In particular, 52 studies (67%) reported information on the reliability of social media measures, while 16 studies (21%) used single-item measures, and for the remaining ten studies no reliability check was conducted. Additionally, 66 studies (85%) reported info on the reliability of well-being measures, in nine cases (12%) it was not applicable, and the remaining three studies did not report on that. Regarding missing data, 56 studies (72%) did not report any information on that, whereas 8 studies (10%) showed more than 10% missing and 14

studies (18%) less than 10%. In 61 studies (78%), the missing data handling was not specified. In 13 cases (17%), listwise deletion was used and the remaining four imputed missing data. A summary of the characteristics of all the included studies is reported in Appendix A (Tables 1–3).

Table 3
Included social media activities.

Social media time	Frequency, duration, time spent, everyday use
Active social media use	Content posting activities, including self-disclosure, photos upload, information sharing, self-generation of content, and status updates, authentic and positive self-presentation, and emotional expression
Passive social media use	Browsing, scrolling of posts, and content consumption
Communication through social media	Messaging, maintaining contacts with friends and groups, composite measures of communication, peer-interaction, social-connection, maintaining online social capital, sending and responding to messages, online bonding activities, calls and videocalls
Other social media activities (positive)	Number of friends on social media or network size, intensity of social media use, and other positive social media experiences (including the frequency of receiving positive feedback, feeling socially connected, perceived popularity)
Other social media experiences (negative)	negative social media experiences (negative experiences with peers on Facebook, perceived waste of time)
Other constructs	Social comparison, problematic social media use

9.2. Measures of social media use

Social media use was measured in different ways, however, most studies investigated non-problematic social media use ($n = 54$, 69%), others problematic social media use ($n = 12$; 15.5%) and the remaining 12 (15.5%) included both non problematic and problematic social media use measures. Among the examined social media platforms, 37 studies (47.5%) considered social media use in general, 21 studies (27%) focused on Facebook, 16 (20.5%) investigated more than one social media platform (usually Facebook, Twitter, Instagram, YouTube, Snapchat, and WhatsApp). In contrast, only four studies specifically looked at the use of specific applications other than Facebook, such as WhatsApp (Bano et al., 2019), Instagram (Longobardi et al., 2020), and WeChat (Huang et al., 2022; Pang, 2022). Regarding specific social media activities, 30 studies (38.5%) measured the time spent on social media in terms of duration or frequency of usage. Additionally, 23 studies (30%) measured active social media use, defined as different content posting activities, including self-disclosure, photos upload, information sharing, self-generation of content, status updates, authentic and positive self-presentation, and emotional expression. Eighteen studies (23%) included passive social media use measures, like browsing, scrolling of posts, and content consumption. Twenty-three (30%) studies measured communication through social media such as messaging, maintaining contacts with friends and groups, composite measures of communication, peer-interaction, social-connection, maintaining online social capital, sending and responding to messages, online bonding activities, also calls and videocalls. Twenty-six studies (33%) explored other social media activities, the majority of which ($n = 11$) collected information on the number of friends on social media or network size, ten measured the intensity of social media use (measured with the scale from Ellison et al., 2014), eight focused on social comparison processes, five on other positive social media experiences (including the frequency of receiving positive feedback, feeling socially connected, and perceived popularity). Three investigated negative experiences on social media like social negative experiences with peers on Facebook and perceived waste of time. An overview of social media measures is reported in Table 3. Studies measuring problematic social media use usually measured this construct using the Bergen Social media addiction scale (Andreassen et al., 2017).

9.3. Measures of well-being

Positive well-being was measured according to five main categories. In particular, 56 studies (72%) included measures related to hedonic well-being. More specifically, 38 (49%) studies assessed life satisfaction, 13 (17%) studies happiness, and 13 (17%) positive emotions. Nineteen studies (24.5%) measured social well-being, usually as social support, social well-being, social satisfaction, social belonging, social integration, or social trust. Only 13 studies (17%) measured eudaimonic well-being as psychological well-being ($n = 10$, mainly using Ryff's scale of Psychological Well-Being), the meaning of life ($n = 2$), or flourishing ($n = 1$). Nine studies (11.5%) used a composite measure of positive well-being, defined in terms of positive self-perceptions, well-being index, psychological adjustment, and positive well-being (defined as the combination of measures like social support, life satisfaction, and positive affect). Finally, four studies included other measures of positive well-being, like resilience, vitality, and empathy. An overview of positive well-being measures is reported in Table 4.

9.4. Use of theories

Only about 40% ($n = 39$) of the included studies explicitly referred to a theory including Uses and Gratification Theory (UGT; e.g., Vannucci and Ohannessian, 2019; Helm et al., 2022; Raza et al., 2020; Jarman et al., 2021; Kim and Shen, 2020), the Social Comparison Theory (Burnell et al., 2019; Chang and Hsu, 2016; Burke and Kraut, 2016), and

Table 4
Included positive well-being measures.

Hedonic well-being	Life satisfaction, happiness, positive mood emotions (mood or affect)
Eudaimonic well-being	Psychological well-being as defined by Ryff (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance), meaning, flourishing
Social well-being	Social support, social well-being, social satisfaction, social belonging, social integration, and social trust
Other (Composite measures)	Positive self-perceptions, well-being index, psychological adjustment, and positive well-being (defined as the combination of measures like social support, life satisfaction, and positive affect).
Other	Resilience, vitality, and empathy

the Displacement Hypothesis (e.g., Hall et al., 2019). Table 5 summarizes the most used theories. In addition to the ones summarized, some other theories reported by the studies include the belongingness theory (Burke and Kraut, 2016; Grieve et al., 2013), the normalization theory (Boer, van den Eijnden et al., 2020), the passive active theory (Zhang et al., 2022), the social capital theory (Zhao et al., 2021), the social

Table 5
Description of most used theories.

Theory	Description
Uses and Gratifications Theory (UGT)	The UGT is widely used in media studies and describes how users with different goals consume social media content differently to satisfy their own needs and fulfill specific gratifications (Kim and Shen, 2020; Lee et al., 2014). Uses and gratifications differ depending on the age of participants. For example, adolescents' social media use (both active and passive) is mainly related to satisfying their needs of identity expression (e.g., the need to discover one's self), information seeking or sharing, escapism, and entertainment (e.g., search for diversion and relaxation). Also, according to the UGT, social media use fulfills the need to maintain personal relationships, pursue a social status, and, also, for surveillance (e.g., by learning about what is going on) (Vannucci and Ohannessian, 2019; Raza et al., 2020). According to the UGT, users select and customize their experience by exposing themselves to selected content (Jarman et al., 2021).
Social Comparison Theory	The Social Comparison Theory has been originally elaborated by Festinger in 1954 (Schmuck et al., 2019). Social comparison is a human state of evaluating one's opinions and abilities compared to others, which is essential for establishing self-identity (Schmuck et al., 2019). On social media, people tend to compare themselves to others (Burnell et al., 2019). In particular, social comparison with people perceived as in a better condition (upward social comparison) is a widely studied mechanism (Burnell et al., 2019) that often makes people feel worse about themselves, especially in adolescence (Burke and Kraut, 2016). Conversely, when the object of comparison is taken as a source of inspiration, social comparison can lead to positive envy and promote well-being (Meier and Schäfer, 2018).
Displacement Hypothesis	The Displacement Hypothesis has simultaneously been used in research studies with the stimulation hypothesis (Naeemi and Tamam, 2017; Kalpidou et al., 2010). This theory suggests that social media time replaces time spent on other activities which promote well-being (e.g., physical activity, sleep, and offline social involvement), thus negatively influencing well-being. Some scholars argue that online social connections cannot be a good substitute for face-to-face communication as they are not deep, emotional, or positive (Naeemi and Tamam, 2017). Conversely, according to the stimulation hypothesis, social media connections might improve social capital and well-being (Kalpidou et al., 2010).

cognitive theory (Koç and Turan, 2021), the social identity theory (Dutot, 2020), and the self-regulation theory (Lee, 2022).

9.5. Quality assessment

The summary score of the quality assessment ranged from 22 (Raza et al., 2020) to 40 (Phu and Gow, 2019), with a median of 31 points. Among all criteria, the majority of the papers (73/78) did not report information on the reason behind a specific sample size (like power analyses). Also, the majority of the papers (66/78) lacked more detailed information on study participants, including eligibility criteria, reasons for exclusion, or reporting a flow diagram to explain how the final sample was reached. A detailed description of each study evaluation is reported in Table 4 in Appendix A.

10. Meta-analytic results

The meta-analytic results are presented first by well-being measures (i.e., hedonic, eudaimonic, social, and other well-being indicators). Then, meta-analyses for each social media activity, sub-group analyses, sensitivity, and other moderator analyses are shown.

10.1. Meta-analyses of well-being measures

The meta-analysis on hedonic well-being reported the majority of the effect sizes, as it included 114 effect sizes (see Fig. 2). Different social media uses were positively or negatively associated with hedonic well-being. In particular, hedonic well-being was positively associated with social media communication ($k = 16$, $r = 0.105$, 95%CI [0.019 - 0.379], $p = 0.040$, $I^2 = 92\%$) and other positive experiences ($k = 4$, $r = 0.206$, 95%CI [0.019 - 0.190], $p = 0.020$, $I^2 = 99\%$). While, hedonic well-being was negatively related to problematic social media use ($k = 19$, $r = -0.130$, 95%CI [-0.203 to -0.055], $p = 0.002$, $I^2 = 99\%$) and social comparison on social media ($k = 4$, $r = -0.297$, 95%CI [-0.486 to -0.081], $p = 0.023$, $I^2 = 83\%$). Hedonic well-being was only marginally related to active social media use ($k = 15$, $r = 0.061$, 95%CI [-0.007 - 0.129], $p = 0.077$, $I^2 = 89\%$) and number of friends on social media ($k = 7$, $r = 0.123$, 95%CI [-0.013 - 0.253], $p = 0.068$, $I^2 = 94\%$).

The meta-analysis on eudaimonic well-being included 21 effect sizes (see Fig. 3). None of the reported social media activities was related to eudaimonic well-being, with the exception of problematic use, which had a negative association ($k = 3$, $r = -0.260$, 95%CI [-0.461 - 0.034], $p = 0.039$, $I^2 = 74\%$). Some social media activities were not represented in this meta-analysis, like the number of friends, the intensity of social media use, and other positive activities. Also, no longitudinal study was included in this meta-analysis.

The relationship between social well-being and social media use was summarized by 33 effect sizes (see Fig. 4). Social well-being was

significantly and positively associated with social media time ($k = 7$, $r = 0.073$, 95%CI [0.041 - 0.105], $p = 0.001$, $I^2 = 9\%$) and social media communication ($k = 7$, $r = 0.183$, 95%CI [0.089 - 0.274], $p = 0.003$, $I^2 = 99\%$), and only marginally with social media intensity ($k = 4$, $r = 0.215$, 95%CI [-0.060 - 0.459], $p = 0.088$, $I^2 = 96\%$). For some meta-analyses (e.g., social comparison, longitudinal studies, passive use, and other positive and negative experiences), there were not enough effect sizes to compute the pooled effect.

Finally, other well-being constructs were summarized in 22 effect sizes, however, none was significantly associated with any social media activities (See Fig. 5).

10.2. Meta-analyses of different social media use

Overall, meta-analytic results of the association between overall positive well-being and different social media activities are displayed in Fig. 6.

Overall, positive well-being was not related to the duration of social media use ($k = 37$, $r = 0.017$, 95%CI [-0.037; 0.070], $p = 0.536$, $I^2 = 95\%$). Similarly, passive social media use was not significantly related to positive well-being ($k = 22$, $r = 0.011$, 95%CI [-0.054; 0.077], $p = 0.727$, $I^2 = 88\%$). Active social media use was significantly and positively related to positive well-being ($k = 22$, $r = 0.083$, 95%CI [0.025; 0.141], $p = 0.007$, $I^2 = 89\%$). Additionally, positive well-being was also significantly and positively related to social media use for communication purposes ($k = 33$, $r = 0.118$, 95%CI [0.060; 0.176], $p < 0.001$, $I^2 = 99\%$), with a small effect size. With respect to other activities, overall positive well-being was positively and significantly related to other positive social media activities ($k = 5$, $r = 0.196$, 95%CI [0.069; 0.318], $p = 0.013$, $I^2 = 89\%$) with a medium effect size. Also, positive well-being showed a small-to-medium effect with the number of friends on social media ($k = 11$, $r = 0.137$, 95%CI [0.044; 0.227], $p = 0.008$, $I^2 = 91\%$), and a medium effect with the intensity of social media use ($k = 10$, $r = 0.205$, 95%CI [0.060; 0.342], $p = 0.011$, $I^2 = 97\%$).

Social comparison on social media was negatively related to overall well-being ($k = 8$, $r = -0.301$, 95%CI [-0.382; -0.215], $p < 0.001$, $I^2 = 75\%$), with a large effect size. Additionally, well-being was also negatively related to other negative experiences on social media ($k = 3$, $r = -0.131$, 95%CI [-0.259; 0.001], $p = 0.051$, $I^2 = 74\%$). However, only three studies were included in this meta-analysis, hence results are limited.

Finally, positive well-being was negatively related to problematic social media use with a small effect size ($k = 31$, $r = -0.125$, 95%CI [-0.209; -0.040], $p = 0.005$, $I^2 = 100\%$). Longitudinally, social media use, in general, did not predict well-being ($k = 6$, $r = -0.049$, 95%CI [-0.142; 0.046], $p = 0.243$, $I^2 = 78.4\%$). However, problematic social media use negatively predicted well-being over time ($k = 4$, $r = -0.160$, 95%CI [-0.301; -0.011], $p = 0.042$, $I^2 = 79\%$).

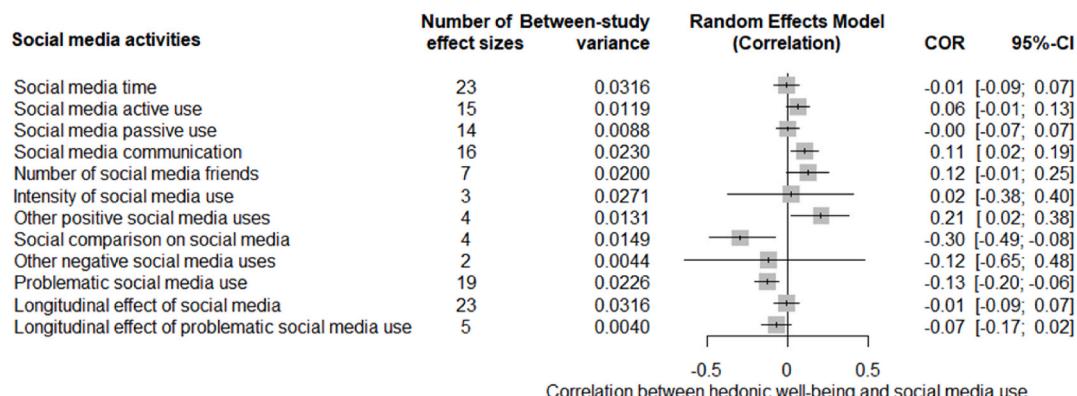


Fig. 2. Forest plot of the meta-analyses between hedonic well-being and social media uses.

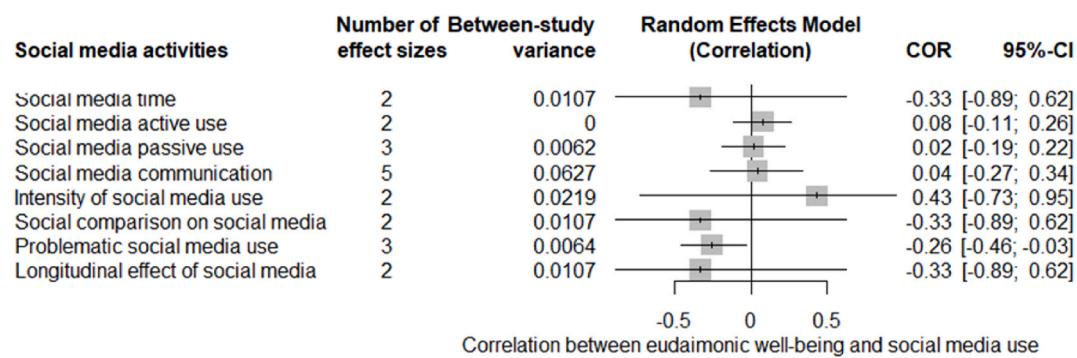


Fig. 3. Forest plot of the meta-analyses between eudaimonic well-being and social media uses.

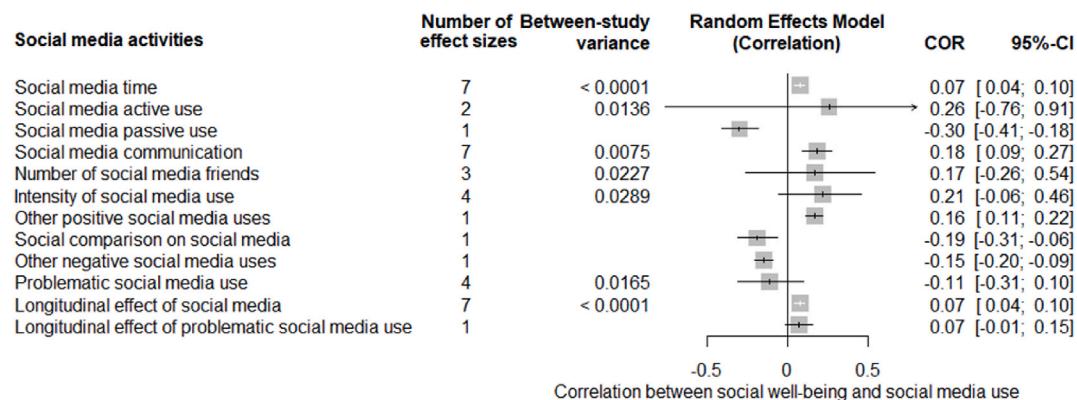


Fig. 4. Forest plot of the meta-analyses between social well-being and social media uses.

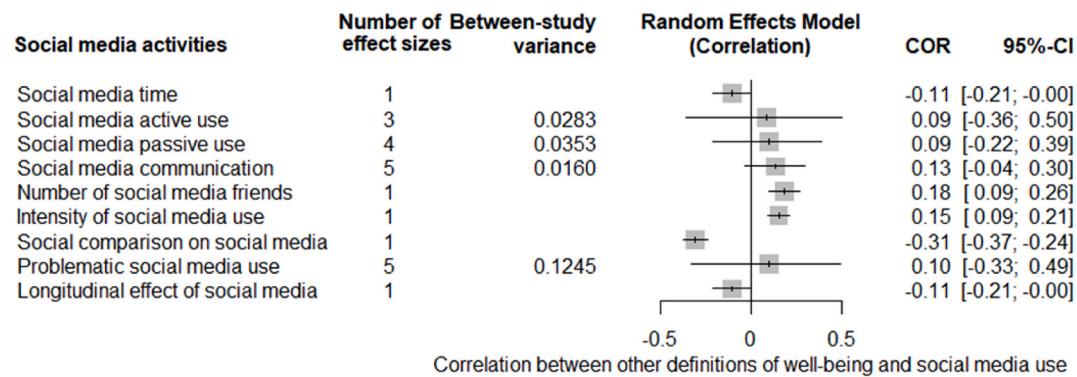


Fig. 5. Forest plot of the meta-analyses between positive well-being and communication through social media.

10.3. Publication bias and sensitivity analyses

According to funnel plots and Egger's regression tests for funnel plot asymmetry, no meta-analysis showed the presence of publication biases, except for the one on social media use and overall well-being ($t = 4.04$, $df = 34$, $p = <0.001$). Also, influence analyses using the leaving-one-out method showed that no study particularly influenced the size and significance of the pooled effect or the heterogeneity levels. However, omitting Raza et al. (2020) and Zhang (2022) runs out the problem of publication bias in the meta-analysis on social media use and well-being, i.e., this effect size was an outlier and affected the publication bias estimation. Main results remained unchanged ($k = 34$, $r = 0.002$, 95%CI [-0.038; 0.042], $p = 0.923$, $I^2 = 86\%$).

10.4. Moderator analyses

Further sub-group considered the country where the study was conducted, age, the sampling procedure, the type of sample, the social media platform(s) investigated, the social media and well-being measures used, and the % of missing data, while meta-regression analyses tested whether the percentage of males in the study influenced the final effect sizes. Significant between-groups comparisons were found for the meta-analysis on problematic social media use and age ($p < 0.001$), in particular, only young adults between 18 and 35 years ($k = 18$, $r = -0.128$, 95%CI [-0.211; -0.043], $p = 0.006$, $I^2 = 95\%$) showed a significant negative association with positive well-being, whereas the association was not significant in children and adolescents ($p = 0.293$) and only one study looked at the population older than 35 years of age. Also, the negative significant association between social media problematic use and positive well-being was significant only in studies using

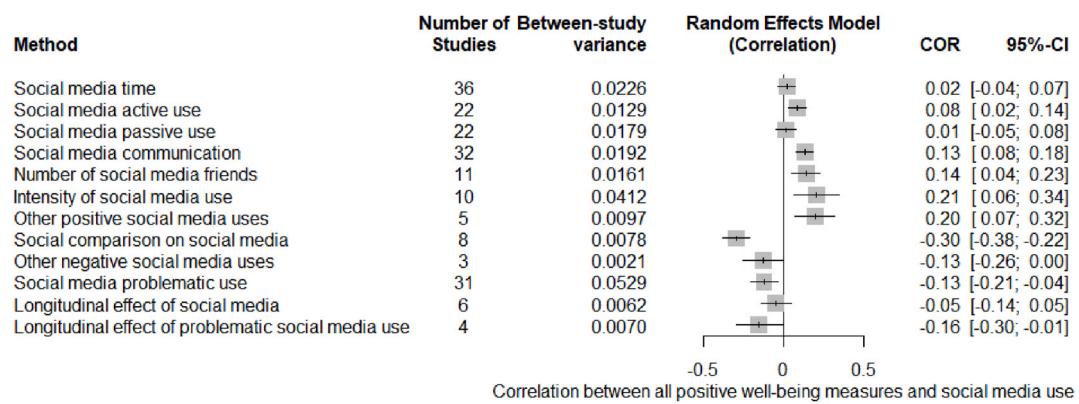


Fig. 6. Forest plot summarizing the meta-analyses between positive well-being outcomes and social media activities.

a convenient sample ($k = 24$, $r = -0.190$, 95%CI [-0.263; -0.114], $p < 0.001$, $I^2 = 100\%$) whereas the association was not significant in studies using random sampling. All the other moderators (i.e., country/continent, participants' age, gender, the type of sampling procedure, population type, type of social media use, type of social media and well-being measure, and percentage of missing data in the analysis) did not have any significant effects on the relationship between social media use or problematic social media use and well-being.

11. Discussion

The dominant discourse on social media research and well-being in both popular culture and academic research has been focused on ill-being. The current meta-analysis aimed to investigate the relationship

between well-being conceptualized in positive ways (rather than the absence of ill-being) and social media use. A systematic literature search yielded 78 eligible studies, overwhelmingly cross-sectional and including samples from North America, Asia, and Europe. Studies conceptualized social media use as both non-problematic and problematic use, and measures of well-being - hedonic (e.g., life satisfaction, happiness, and positive emotions), eudaimonic (e.g., meaning in life, autonomy, self-acceptance), social (e.g., social support, capital), or other positive (e.g., empathy, resilience) and composite well-being indicators were included in the meta-analysis.

By doing so, this meta-analysis differs from the previous ones as it does not combine ill-with well-being outcomes, but it is the first to depict a comprehensive picture of positive frames outcomes in relation to social media use. In the attempt to classify well-being outcomes,

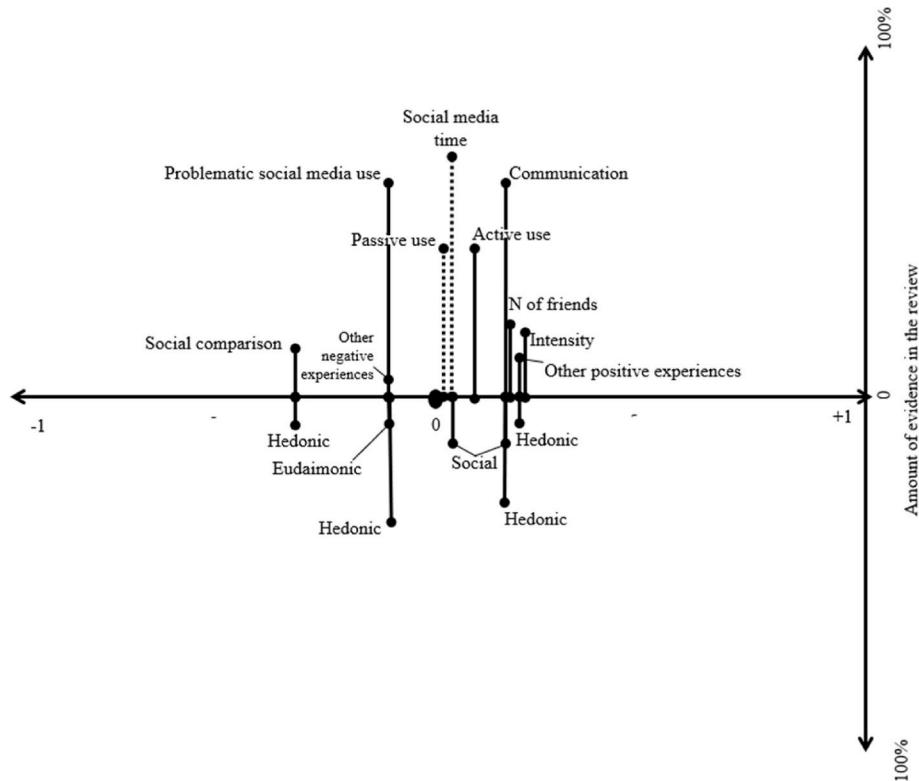


Fig. 7. Amount of evidence on the link between social media use and well-being, weighted by the number of effect sizes included in the review (dotted lines = non-significant effect size). Social media usages are represented above, and well-being construct below the baseline line. Each construct is positioned on a continuum from -1 to +1 reflecting the size of the correlation. The orthogonal line on the right reflects the amount of evidence in the meta-analysis in % respect to the overall included studies. Only significant correlations between the related social media and well-being construct were represented, with a larger amount of evidence for hedonic well-being.

philosophical conceptualizations of hedonic, eudaimonic, and social well-being have been applied, thus creating a useful meta-analytic framework for future research looking at social media effects and informing what measures are missing in research studies. At the same time, different social media activities have been classified and combined with well-being outcomes, thus giving a more comprehensive picture of where we have much evidence versus where the evidence is lacking and requires further investigation. With the aim to give an overview of the overall results, Fig. 7 shows the amount of evidence on the link between social media use and well-being. In particular, by looking at the overall results, a consistent picture emerges: effect sizes pile up around zero when social media constructs are too broad (e.g., screen time) to comprehensively understand what is going on and the nature of the social media activity. In particular, the point of correlation equal to zero (small or non-significant effect sizes) includes general measures of social media time, passive and active social media use. While, effect sizes become larger - both in the negative and positive directions - when specific activities are tackled (e.g., social comparison versus positive experiences). However, the amount of evidence for specific activities diminishes.

Hence, we are possibly missing a part of the picture on social media effects as current published research has been focused on constructs that can explain only little variation (e.g., screen time) while more nuanced constructs have usually been overlooked. While many studies focused on momentary measures of hedonic well-being, social and eudaimonic well-being should be further explored, and their associations with social media use seem to go in both directions - with the same strength – depending on the activity considered. Among all included activities, social comparison on social media seems to be one related to worse outcomes, even more than problematic use, and thus, it should require important consideration in interventions. More detailed results are discussed below.

More specifically, the meta-analysis indicated the following four main findings. First, the existing literature exploring social media use and positive well-being dimensions mainly focused on hedonic well-being, including positive emotions, affect, life satisfaction, and happiness, while fewer studies looked at social well-being, and eudaimonic well-being received little or no consideration. This result is not surprising, considering that hedonic well-being is easier to define and measures are more frequently used. In contrast, the concept of eudaimonic well-being is multifaceted and requires longer surveys tackling different dimensions.

Second, if we look at all social media activities, positive links have been consistently found between hedonic and social well-being with social media communication. Communication through social media includes different activities like messaging, composite measures of communication, maintaining online social capital, calls, and video calls. Positive effects are mainly related to the possibility of augmenting social capital, including bonding (related to close ties able to support the user emotionally) and bridging (including distal ties that can enable access to information and different perspectives) social capital (Ellison et al., 2007). The relational dimension of social capital focuses on specific facets like friendship and trust, leading to the accrual of more social capital and/or maintenance of it and the enhancement of human relationships (Lai et al., 2019). Since social capital is based on interactive and reciprocal relationships, communication through, for example, instant messaging applications, is particularly appropriate for enhancing permanent connections, thus augmenting well-being (Bano et al., 2019). Enhanced social capital can also augment well-being by giving access to more information and emotional support thanks to the existing online social network (Ellison et al., 2007), contributing to social needs (Kross et al., 2013), and providing support also in case of stressful periods like the COVID-19 pandemic (Marciano et al., 2021). One way to apply this finding is to consider how fostering social media communication opportunities (e.g., online communities) and instant messaging activities (e.g., promoting one-to-one or one-to-few communications like group

chats) can benefit well-being, especially for marginalized groups.

Social media communication is an active behavior, and its positive effects align with the third key finding of our review: Activities carried out on social media in an active rather than passive way were related to higher well-being. In particular, active social media use and positive well-being were associated with a small effect size. Active social media use refers to content posting, self-disclosure, self-generation of content, and status updates. It has been widely described that actively engaging in social media platforms might be less at risk of negative outcomes since users sharing and creating activities align with their views and opinions (Escobar-Viera et al., 2018; Verduyn et al., 2017, 2022). Active social media use enhances authentic self-expression and connection with the community. Additionally, active use may enhance well-being through other mechanisms, such as self-disclosure and psychological authenticity. For example, self-disclosing information makes one more aware of others' responsiveness to their needs, thus perceiving higher social support (Luo and Hancock, 2020). Also, posting, sharing, and creating content can be seen as a "capitalization process" in which expressed thoughts and emotions influence well-being since they augment the salience and meaning of events, thus allowing to retrieve memories (Luo and Hancock, 2020). Also, authentic self-expression and emotional expression have been described as related to higher life satisfaction (Bailey et al., 2020). Practically speaking, in general, it is better to use social media to express something about ourselves -related to our hobbies, emotions, and identity – rather than passively scrolling it as the recipient of other people's content.

In general, passive use involves scrolling (idealized) profiles, pictures, and updates generated by others. Although it has been generally related to lower well-being from previous literature, in our meta-analyses, it was not related to any well-being indicators. Hence, our results speak against the validity of the passive use hypothesis and resonate with previous narrative reviews' findings (Meier and Krause, 2022; Valkenburg et al., 2022). In addition, our work provides a meta-analytic summary that was previously lacking, suggesting that effect sizes considering passive social media use range from -0.05 to 0.08 , with an overall null effect ($r = 0.01$). Passive use often results in detrimental outcomes since it is mainly related to the monitoring of other people's lives without engagement (Verduyn et al., 2017), social comparison and envy (Meier and Krause, 2022), although effect sizes are small. At the same time, passive use can enhance well-being by increasing self-expressive behaviors in response to envy or providing users with inspirational content, thus augmenting benign envy (Meier and Krause, 2022). However, we should acknowledge that the passive vs active dichotomy might be outdated, and new studies should focus on the interconnections of the two (Verduyn et al., 2022) by looking at the specific processes involved, both negative (e.g., upward social comparison) and positive (e.g., entertainment and exposure to inspirational content). By doing so, we can differentiate when a passive use is negative versus positive and thus explaining the heterogeneity in the results. From a practical point of view, we can state that although active social media use is better than passive one, users should consider how they engage in passive use. Suppose their use is driven by positive envy (e.g., by looking at inspirational content) or entertainment (e.g., by watching funny content). In that case, the overall effect on well-being is likely to be small and positive. While if the passive use is driven by social comparison (e.g., by looking at other people's "perfect" lives and bodies), the consequent effect is likely to be negative.

Fourth, social comparison through social media seems to be the social media "plague" with a strength of association which is larger than problematic social media use, although summarized by fewer studies. Indeed, social media comparison was related to lower well-being with a medium-to-large effect ($r = -0.30$). This is not surprising given the large literature on the role of upward social comparison with negative outcomes like loneliness, distress, and depression (e.g., Appel et al., 2016; Vogel et al., 2015; Yang, 2016), due to the presentation of information positively skewed and high, unrealistic standards. Eventually, studies

focusing on problematic digital media use were negatively related to well-being with a small effect size ($r = -0.13$), echoing the result of a review on problematic social media use and mental health in 33 studies, in which life satisfaction and self-esteem showed a small association with problematic social media use, whereas depression and loneliness a moderate one (Huang, 2022). Hence, we suggest that relying on problematic social media use measures might be limited since it does not completely reveal the psychological processes involved that can cause negative feelings such as social comparison. Indeed, measures of problematic social media usage are usually broad and mainly refer to the attachment to social media activities and emotional discomfort when these activities are not allowed, but are limited in terms of the content of such behavior. Also, among longitudinal studies, only social media problematic use negatively predicted well-being. This result is in line with a longitudinal study in which problematic social media use decreased life satisfaction through loneliness (Marttila et al., 2021). Practically speaking, we can imagine that lowering any kind of social comparison content (e.g., especially fake or retouched images not representing reality) and social media features boosting social comparing behaviors (e.g., social metrics like the number of likes or followers) could positively influence well-being.

In addition to these four main findings, our meta-analysis showed that social media time measures could not catch the full nuances of association with well-being, thus mirroring the debate on overcoming the use of time measures when it comes to digital behavior. Among all well-being variables, social media time was the only one related to social well-being with a positive and small association. In contrast, other conceptualizations of well-being did not show any significant association with social media time. Our results further sustained that social media time is not very informative when studying the relationship with well-being, although it is still the most used measure. Indeed, results are mixed, ranging from very small and negative to very small and positive (with r between -0.04 and 0.07). The only exception is the association between social media time and social well-being (e.g., social support, belonging, satisfaction, integration, capital), which was positive and significant, although small ($r = 0.07$). Hence, we strongly discouraged the use of self-reported social media metrics as little is explained. Also, we encourage considering how the amount of well-being variance explained may have been previously limited by the use of broad measures (e.g., screen time).

Other positive associations were found with respect to other positive social media activities, like the number of friends. This positive relationship with the network size supports previous findings linking the number of friends with life satisfaction and happiness (Manago et al., 2012). Larger networks imply that larger numbers of people observe what is happening in one person's life when one updates the status-profile. Since status updates are related to emotional disclosure and intimacy, a large number of friends might result in augmenting the feeling of the user's intimacy with the social media environment, thus helping satisfy enduring human psychosocial needs for lasting relations, also in case of being geographically distant (Manago et al., 2012). Additionally, the intensity of social media use was also positively related to well-being with a medium effect size ($r = 0.21$). In this case, users who engage with social media content more "intensely" often reported positive outcomes as they feel more tied to the social media community (Ellison et al., 2007). Other positive social media activities (including the frequency of receiving positive feedback, and perceived popularity) were also related to well-being with a medium effect size. Additionally, other social media activities like negative Facebook experiences and perceived waste of time were related to lower well-being. The latter is particularly in line with the literature on the role of procrastination (Alblwi et al., 2021).

One final important point should be elaborated on the "missing data" of our review. Although social media use has been found to be helpful for minorities (Escobar-Viera et al., 2022), people experiencing health disparities (Vereeen et al., 2023) and chronic health conditions (Bizzotto

et al., 2023), especially for creating and maintaining social communities, these populations were largely absent in our review. Also, few studies looked at populations in countries other than North America, Europe, and Asia. Hence, data on the global South - except for South Asia and China - are almost entirely missing, although the majority of adolescents (who are also the heaviest social media users) live in these countries (including Sub-Saharan Africa, Middle East & North Africa, and Latin America) (Ghai et al., 2022). Hence, our review further underlines the importance of addressing the problem of "data absenteeism", especially when it comes to unprivileged groups (Lee and Viswanath, 2020; Viswanath et al., 2022). In particular, to further study social media and well-being, researchers should evaluate the quality of collected data in addressing key questions on well-being disparities (Lee and Viswanath, 2020) and evaluate how to involve "hard to reach" populations by, for example, actively involving communities in research using a participatory approach (Viswanath et al., 2022).

At the same time, older people were poorly represented, with young people (including adolescents and young adults up to 35 y.o.) being the most reported age range in our review. Hence, future research should include more older adults, especially considering that some positive effects – mainly related to the possibility of maintaining social connections – have already been reported (Cotten et al., 2022).

Finally, social media use was measured in a more heterogeneous way when compared to well-being. Indeed, half of the studies used ad-hoc measures or adaptations of existing validated ones. This variety reflects the difficulty in operationalizing social media activities, especially when the social media environment is changing rapidly, and applications and platforms update with new features quickly, thus making it difficult to develop valid measures that do not become immediately outdated. Hence, the research field should now consider the development of more flexible and adaptable indices referring to the characteristics and affordances of social media platforms. These indices/measures should be ideally adaptable to different social media platforms and be able to catch key features and affordances in a way that is platform-independent. Only by doing so we can stay up to date with the study of social media effects also in the case of the release of new platforms that scale at a fast pace (e.g., the new Meta platform Threads reached more than 10 million users in few days; Isaac, 2023). On the contrary, almost 90% of the included studies measured well-being using validated scales. Eventually, only a minority of the studies used a theory to derive their hypotheses, with just a few using the same framework. This reflects the need for theoretical reflection and improvement by considering the different aspects of both social media use – in terms of usage – and well-being – in terms of well-versus ill-being perspectives.

12. Limitations

This study comes with some limitations. First, heterogeneity levels were high, that might be due to samples and contexts that we did not consider, although we partially addressed them by conducting sensitivity, sub-group, and meta-regression analyses. Additionally, in order to be comprehensive and not eliminate effect sizes of less studied constructs (e.g., positive and negative social media experiences) some meta-analyses included smaller samples and few studies, so it is possible that results are not representative of larger populations and effect size should be interpreted carefully. Finally, in some cases, we could not run subgroup or meta-regression analysis due to the insufficient number of studies with comparable characteristics, hence future studies should look at the understudied factors (like positive and negative social media experiences) to better explore how well-being can be improved (or protected). Also, we only included studies in English, mainly referring to Europe and North America, and some from Asia. However, the generalizability of our results is limited to the included countries. We also did not have enough information on socioeconomic status. Therefore, we do not know how social media use affects people with high versus low socioeconomic status. The genders mentioned in the articles were male and

female. There is no mention of LGBTQ+ gender and sexual differences. Therefore, we don't know how social media use affects the well-being of LGBTQ+ communities. The context of recruitment can limit the generalization of results to different contexts. To overcome this limit, we encourage researchers and practitioners to collaborate more with communities and "hard to reach" populations to try to compensate for possible biases in the current samples and bring more awareness on how social media use can influence the well-being of people from different cultural contexts, including minorities. Finally, we could not consider how effect sizes differed in studies before or after the COVID-19 pandemic, hence, future studies should carefully consider how what is the potential effect of the pandemic on the link between social media use and well-being, given the significant increase in technology use since 2020. Last but not least, the subjectivity of self-reported well-being measures can limit the applicability of results. To overcome this issue, we suggest that self-reported well-being measures should be coupled with objective data on well-being (e.g., biomarkers) to convey more objective information on how digital behavior is related to objective measurable mental health outcomes.

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CRediT authorship contribution statement

Laura Marciano: Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Jeffrey Lin:** Writing – review & editing, Methodology, Data curation. **Taisuke Sato:** Writing – review & editing, Methodology, Data curation. **Sundas Saboor:** Writing – review & editing, Data curation. **Kasisomayajula Viswanath:** Writing – review & editing, Methodology, Funding acquisition.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Laura Marciano reports financial support was provided by Swiss National Science Foundation. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmh.2024.100331>.

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