

Social Media and Psychological Well-Being

Jeffrey T. Hancock, Sunny Xun Liu, Mufan Luo,
and Hannah Mieczkowski

Is social media good or bad for us? Our research group at the Stanford Social Media Lab has been fielding this question for years from a wide variety of perspectives: parents concerned about their children's use of social media, policy makers worried about the effects on society, startups excited to spark creativity or new connections, tech companies trying to ensure that their products have a positive impact. The question of how social media is related to well-being has inspired a massive quantity of research by scholars around the globe, with hundreds of studies examining this question since the first paper on the topic came out in 2006. Despite this plethora of empirical evidence, the question remains hotly debated not only in popular discourse but also in the academic literature.

The 2020 American “docudrama” *The Social Dilemma* provides a salient case for one side of that debate, namely, that social media is harmful for people. It describes how using social media is addicting, narcissistic,

<https://doi.org/10.1037/0000290-007>

The Psychology of Technology: Social Science Research in the Age of Big Data, S. C. Matz (Editor)
Copyright © 2022 by the American Psychological Association. All rights reserved.

and superficial, undermining to our relationships, our cognitive powers, and ultimately increasing our anxiety, loneliness, and depression. It's slickly produced, with powerful metaphors equating social media with other addictive and harmful substances. The portrayal of several fictional stories showing how social media can harm people, complete with dark and gripping music and excellent acting, captures the concerns that many hold about how social media is dangerous and harmful. Indeed, the movie's popularity reflects the widespread concern that parents, teens, educators, and policy makers all have about how social media is affecting our well-being.

The movie leaves many important questions unanswered and highlights many of the difficult conceptual and methodological issues that emerge when asking if social media is good or bad for well-being. We need a better scientific understanding of these questions. For example, what does it mean to "use" social media? The movie unfortunately fails to distinguish between different usages of social media, and this is an important—but often overlooked—component of the methodological challenges researchers face when trying to answer the question. *The Social Dilemma* implicitly assumes that time spent is what matters, with more use leading to more detrimental effects. But there are myriad ways to engage with social media, and an hour spent doing one thing, like creating a TikTok video with close friends, can be radically different from an hour spent doing something else, like stalking an ex-spouse. Similarly, what do we mean by the question "Is social media is good or bad for us?" Typically, this refers to our well-being, which can be about physical, mental, or emotional health and/or social and cognitive function. Without careful conceptualization of well-being, it is difficult if not impossible to make any claims about how social media affects us. Here we focus on psychological well-being and consider both negative indicators, including depression, anxiety, and loneliness, and positive indicators, including eudaimonic (life-satisfaction), hedonic (emotional), and social well-being.

Another open question is the nature of the relationship between social media and well-being. *The Social Dilemma* movie assumes that social media has a causal effect on well-being. Indeed, the movie portrays an

extreme version of technological determinism, which assumes that technology has direct and causal effects on human life. In this view, humans have no agency; instead, technology operates on people. Indeed, one of the metaphors from the movie is that people are like drugged patients lying on a surgery bed while social media companies operate on us. This kind of technological determinism is a common ingredient in moral panics that typically arise with new technologies. Orben (2020) documented this form of technological determinism in moral panics regarding radio, comic books, television, and video games. We need to pay careful attention to the kinds of claims that research can make about the direction or causal nature of the relationship between social media and well-being.

Finally, and perhaps most shockingly, given how much research has been conducted on social media and well-being, most debates take place without reference to the vast amount of evidence that has already been collected. News stories tend to focus on a single study, or worse, not include any grounding in science. *The Social Dilemma*, for example, presents almost no scientific evidence. Although the movie includes scientists, there is very little reference to scientific studies, and there is no reference to any research that actually connects social media and well-being.

So, what does science tell us? What is the accumulated evidence from the past decade of social science research into the harms and benefits of social media for well-being? In this chapter, we describe our research group's efforts to tackle the question of social media use and its relationships to psychological well-being. For the past several years, we have reviewed this entire literature from 2006 to 2018 as part of a large meta-analysis (Hancock et al., 2019). Here, we go over some of the key findings from this analysis, along with other insights we gleaned.

The chapter is organized first around this meta-analysis (Hancock et al., 2019) and the empirical findings for key questions concerning social media use and well-being. The second part of the chapter reviews the many conceptual mechanisms that authors have proposed for how social media and well-being may be linked. In the third part, we highlight some of the key methodological issues that became clear in our review. For example, over 75% of all the studies we examined were correlational, cross-sectional studies. In this section, we highlight some of the changes that are required

for our field to improve our understanding of social media and well-being. In the last section of the chapter, we describe how the field can move forward focusing on some new methods that we believe will advance the field as well as some new conceptualizations that could be important in rethinking the relationship between social media and well-being, along with more nuanced analyses of different populations.

META-ANALYSIS OVERVIEW

We set out to conduct the most comprehensive meta-analysis to date on social media use and well-being. While other reviews have focused on specific time periods or on specific forms of well-being (Cheng et al., 2019; Domahidi, 2018; D. Liu et al., 2016; Twenge, 2020; Verduyn et al., 2017), we were interested in studying the relationship from the onset of social media research and in considering both positive and negative forms of well-being. Our analysis included all empirical studies examining the relationship between social media use and six types of psychological well-being (depression, anxiety, loneliness, eudaimonic, hedonic, and social) from 2006 to 2018. After reviewing 5,214 articles from the four largest databases in psychology, communication, and human–computer interaction, we applied a careful inclusion and exclusion review, which resulted in a final sample of 226 peer-reviewed papers. Across all the papers, there were a total of $N = 275,728$ participants and a total of 1,279 effect sizes calculated. Next, we lay out some of the key questions we were able to ask of this large field of evidence.

Is There an Overall Effect of Social Media Use on Well-Being?

Returning to the main question we posed at the beginning of this chapter—“Is social media use good or bad?”—we first examined the overall effect size of the relationship between social media and well-being. To look at this, we combined the negative and positive forms of well-being into one index. By doing aggregation, we could focus on the relationship regardless of the specific form of well-being measured and include all of the studies from the meta-analysis (i.e., all 1,279 effects). For example,

high scores on depression would now be equal to low well-being, while low scores on life-satisfaction would also equal low well-being. Following this approach, we found that the weighted mean effect size across all studies was $r = 0.01$ $[-.02, .04]$. This effect is not only very small, but it is also a very precise estimate around zero, with the 95% confidence interval indicating that the relationship between social media use and well-being was a correlation somewhere between $r = -.02$ and $r = .04$ and therefore nonsignificant. Thus, when we look across all the studies conducted between 2006 through 2018, including all six types of well-being, social media use is not significantly associated with well-being—it is neither good nor bad.

This finding is consistent with those of several other recent studies that have suggested that any general relationship between social media and well-being is small at best (Heffer et al., 2019; Orben & Przybylski, 2019; Schemer et al., 2020). Orben and Przybylski (2019) found that only 0.4% of the variance of well-being can be accounted for by digital technology use, while Schemer et al. (2020) found that social media use's connections with depression ($b = 0.003$) and life satisfaction ($b = -0.0004$) are close to 0 after controlling for other variables.

Has the Effect of Social Media Use on Well-Being Changed Over Time?

Although we did not observe an overall effect of social media use on well-being, it is possible that looking at this relationship over such a long period is masking effects that change over time. One concern that has been raised recently is that social media may have become more harmful after 2012. While there is no documented causal link between social media and well-being at this time, some authors have noted that mental health for adolescents declined in 2012 and that social media use began to be taken up on mobile phones around this time (Twenge, 2020).

In the top half of Figure 6.1, we show the overall mean effect size by year. In this figure, higher scores represent more positive associations between social media use and well-being. In 2012, there is indeed a decrease from

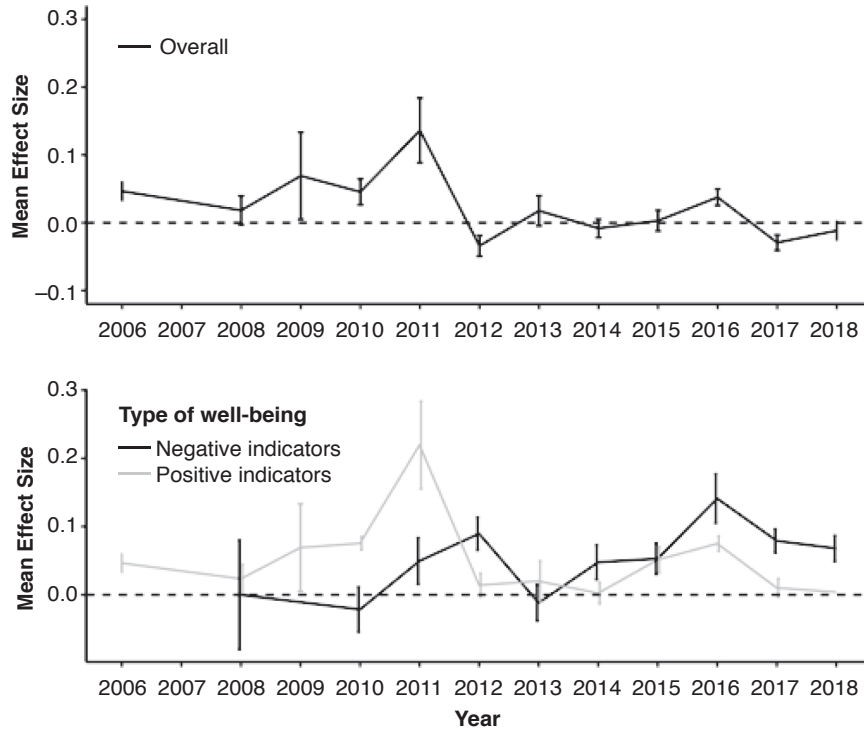


Figure 6.1

Mean effect size for the association between social media use and well-being over time. The black line in the top panel denotes the average effect size aggregating by positive and negative outcomes. The lines in the bottom panel denote the effect sizes for positive (i.e., eudaimonic, hedonic, and social) and negative indicators (i.e., anxiety, depression, loneliness) of well-being. Error bars denote standard errors.

the previous year, although this decrease is driven in part by a paucity of studies in 2011 and 2013 for some forms of well-being (e.g., there was only one study on anxiety in each of 2011 and 2013). Statistically, there is a significant decrease in the effect size over the 12 years. The measured effect sizes between social media use and overall well-being have become more negative over time, although the change represents a very small effect size, going from roughly $r = .05$ in 2006 at the start of research on social media and well-being to $r = -.01$ in 2018.

How Is Social Media Use Related to Different Kinds of Well-Being?

One unique aspect of our meta-analysis (Hancock et al., 2019) is that in addition to looking at well-being generally, we could drill down into how social media is related to specific forms of well-being. This allowed us to see, for example, whether the null effect we observed with overall well-being was replicated in each specific type of well-being or whether there were patterns of effects across the positive and negative forms of well-being that led to an averaging out. When we looked at the negative indicators of well-being, we found that social media use had small but significant associations with anxiety ($r = .13$) and depression ($r = 0.12$) but not loneliness. On the positive side, we found a larger though still small association with social well-being ($r = .20$) but not with eudaimonic or hedonic well-being.

This pattern of results suggests that social media can affect well-being both positively and negatively at the same time. It also revealed that our null effect for overall well-being was, in part, driven by the averaging out of small effects for both negative and positive indicators. These findings suggest that there might be a potential trade-off of social media use between elevated depression and anxiety along with improved social well-being.

Is Active Use Better Than Passive Use?

Prior research has suggested that active (e.g., sending a message, uploading a picture) versus passive use (e.g., reading tweets or looking at Instagram pictures), defined as the extent to which direct information exchange with others is involved, can generate different effects on well-being. This work shows that while passive use undermines people's well-being, active use can have positive effects (Burke & Kraut, 2016; Verduyn et al., 2017). We compared the relationships between passive and active use with well-being and found no significant difference. We then calculated the effect sizes of active and passive social media use and their associations with each well-being type. The findings suggested that active social media use was positively associated with overall well-being, depression, eudaimonic,

and social well-being. In contrast, passive social media use was associated only with depression. Therefore, although active use correlated with more positive well-being outcomes, it was also linked with increased depression. Overall, the pattern provides only partial support for the proposition that active use is more positive for well-being than passive use.

Does How We Measure Social Media Use Matter?

When coding the different studies included in our meta-analyses (Hancock et al., 2019), we noticed that the vast majority relied on self-reported social media use, asking participants how much they use social media rather than observing or measuring behavior directly. As a result, we also noticed the different ways in which social media use is framed in these measures. One important framing was whether social media use was addictive or not. We separated studies that focused on addictive social media use and used scales that measured social media addiction from studies that used more neutral framing of use. When we compared these two types of studies, we found that studies that used addiction-related scales produced significantly different relationships from those that did not frame social media use as addictive. Addictive social media use was negatively associated with overall well-being, while neutral social media use was positively associated. This pattern of results might be explained in two ways. First, it is possible that people who experience high levels of addictive social media use indeed experience lower levels of well-being. However, it is also possible that the framing of social media as potentially addictive influenced participants to view their experience with social media more negatively. We explore this possibility in deeper detail in the section on methodological issues.

Do the Effects Change Across Populations?

A major challenge for the field is that studies often differ in the types of populations they use. These populations, in turn, might be highly heterogeneous in their social media use as well as the goals and needs they try to accomplish or satisfy with it. A teenager using social media to develop

their identity and friend network is at a very different stage of their developmental trajectory than a grandparent whose identity is well-established and who uses social media to maintain old friendships and family ties. Unfortunately, over half (54%) of the studies we reviewed focused on college students, likely due to their convenience as a sample, but make inferences about the general population. Student populations are important to study because social media use is often higher among younger people. However, it is important to acknowledge that this population is likely different in many aspects from other sociodemographic groups and to be cautious about prematurely generalizing from one population to another.

When we analyzed the effects for specific age populations, we found no statistical differences for any of the participant population types for overall well-being. When we focused on each individual well-being type, we found social media use among college students was associated with higher social well-being, suggesting that for that age group social media use is positive for social connectedness and building social capital. For studies focusing on adolescents, social media use was significantly associated with both higher depression and higher social well-being, again suggesting a trade-off for social media use for young people and their use of social media. Notably, these effects are small ($r = .13$ for depression, $r = .16$ for social well-being) but consistent with a recent high-quality study of adolescents that found little evidence for longitudinal effects of social media and mental health (Jensen et al., 2019).

Another population dimension that we considered was geographical, given that culture and region may be important moderators for well-being effects. We compared studies conducted in North America versus Asia versus Europe. Interestingly, the effects were strikingly different across the three regions. Studies conducted in Asia produced overall positive associations between social media use and well-being, while studies conducted in Europe produced negative associations. Studies from North America were in the middle, though statistically more positive than zero. These data are important, as they suggest that there are notable cultural differences in how social media and well-being are related. If, for example, there is some core psychological effect, then we should not see large differences

across these populations. Instead, these results suggest several intriguing possibilities. It could be that different societies are using social media to different effect, or that different societies have varying assumptions about social media, perceptions about privacy, and norms relating to networking. These culturally specific assumptions, perceptions, and norms influence users' expectations. More research is needed here to unpack these cultural differences.

What Do Cross-Sectional Versus Longitudinal Versus Experimental Studies Tell Us?

In our final sample of articles, a majority of studies were cross-sectional in nature: 75% of all articles were cross-sectional studies, 23% were longitudinal, and 2% were experimental. We found that the methodology did not significantly moderate the observed correlations between social media use and overall well-being. However, when breaking the analysis down by individual well-being indicators, we found that cross-sectional studies produced positive associations with anxiety, depression, and social well-being. In contrast, longitudinal studies of social media use produced correlations with only depression and social well-being. There were too few experimental studies to meta-analyze except for eudaimonic and hedonic outcomes, and neither produced a significant association with social media use.

Is There a Causal Link, and if so, What Is the Direction?

The causality of the relationship between social media use and well-being remains speculative and has been debated in a number of contexts. For example, do lonely people use social media more, or does social media use make people lonely? We used longitudinal data in our meta-analysis and used cross-lagged effects to explore the direction of the effect between social media use and well-being. The finding suggested that positive psychological well-being (eudaimonic well-being, hedonic well-being, and social well-being) leads to decreased social media use, not vice versa. For

psychological distress (loneliness, depression, and anxiety), neither direction was found to be significant, indicating no causal relationship between social media use and psychological distress.

MAPPING THE CONCEPTUAL SPACE LINKING SOCIAL MEDIA USE AND WELL-BEING

It became clear during our review of the existing literature for our meta-analyses (Hancock et al., 2019) that there is no coherent conceptualization of the relationships between social media use and well-being and no explanation of the mechanisms driving these relationships. There was a striking range of explanations, assumptions, and propositions about how and why researchers believed that using social media would influence well-being or vice versa. Many studies never explicitly articulated the assumed conceptual mechanism linking social media with well-being, whereas others would identify a mechanism but fail to test or measure it.

In an attempt to make sense of the various theoretical connections proposed in the literature and to provide a comprehensive framework for future research, we conducted a qualitative review of the articles. The result is what we believe is one of the first compilations of the various theoretical mechanisms proposed by researchers that connect social media and well-being. In our qualitative analysis, we identified 10 conceptual mechanisms that were assumed, proposed, or tested by study authors in our meta-analysis database. Table 6.1 describes each of these constructs and provides an example. We mapped these 10 constructs into three higher level categories: social structure, psychological processes, and behavioral dynamics. While we acknowledge that this list is not conclusive, we do believe that it provides a useful framework for future research that explores the mechanisms underlying the relationships between social media use and well-being.

Social Structure

We identified two conceptual mechanisms that were based on participants' social structure. *Network metrics* focused on individuals' actual and perceived

Table 6.1

Conceptual Mechanisms Linking Social Media Use and Well-Being

Conceptual mechanisms	Description
Social structure	
<i>Network size</i>	# of online friends, # of likes received, perceived network size, etc.
<i>Social support/Social capital</i>	perceptions of tangible and intangible assistance from one's social network
Psychological processes	
<i>Social comparison</i>	evaluating oneself through comparison with others
<i>Connectedness</i>	perceptions of feeling socially connected with others
<i>Fear of missing out</i>	apprehension that others are having experiences without one
<i>Overload</i>	perceptions of too many social demands
<i>Social compensation</i>	use of social media to compensate for challenges encountered offline
Behavioral dynamics	
<i>Displacement/enhancement</i>	social media use displaces or reinforces meaningful interpersonal communication and social activities

network size, as well as the expected amount of feedback derived from the audience. These aspects can play important roles in how people engage on social media and how they feel about themselves. For example, the number of received Likes on one's profile pictures can have a positive impact on self-esteem (Burrow & Rainone, 2017). Other research revealed that a higher proportion of actual friends in one's network was associated with lower levels of loneliness (Chang et al., 2015). In contrast, some studies found that a larger network size can exacerbate distress and negative online experience when online friends fail to provide tangible social support (Best et al., 2015).

We defined *social support* as various types of assistance, both tangible and intangible (e.g., informational, emotional, belonging), offered by a social network (Cohen & Hoberman, 1983; Uchino, 2004). Feeling a sense of greater social support has been shown to benefit psychological well-being. Research showed that lower perceptions of friends' support

negatively affect people's depressed mood (Frison & Eggermont, 2015), whereas more active use is positively associated with people's perceived social support, which leads to reduced loneliness (Seo et al., 2016). Research has shown that social media use is positively associated with both bridging and bonding social capital, which can lead to higher self-esteem (Brooks et al., 2014; Choi & Kim, 2016).

Psychological Processes

As for psychological processes, *feelings of connectedness* refer to the extent to which individuals feel related to one another in their lives and behavior, which serves an intrinsic need important for well-being (Deci & Ryan, 1985). In contrast, social exclusion and isolation have negative effects on psychological well-being. Research has shown that general Facebook use can facilitate connectedness and reduce social isolation (Ahn & Shin, 2013), which in turn can decrease loneliness (Deters & Mehl, 2013), depression, and anxiety, as well as promote life satisfaction (Grieve et al., 2013). For the same reason, a lack of social network site use can intensify distress due to increased social exclusion (Chiou et al., 2015). As for specific social media use, research suggests that active participation such as chatting and commenting can increase connectedness, thereby promoting positive emotional states (Neubaum & Kramer, 2015).

Social comparison is a prominent and automatic form of self-evaluation (Bandura & Jourden, 1991; Wood, 1989). Festinger (1954) argued that social comparison occurs when there is no objective information on which an individual can base their evaluations. Performing a "downward comparison," or mentally degrading another in some manner, is typically associated with an increase in well-being (Wills, 1991). That is, when someone feels that they are in a better position than others, they tend to feel better about themselves and may also experience a self-esteem boost (Morse & Gergen, 1970). When someone feels they are worse off than others, a decrease in both well-being and self-esteem is common (Wheeler & Miyake, 1992). Evidence to date supports upward comparisons triggered by social media use. For example, more Facebook use corresponds to lower self-esteem and life satisfaction and higher depression because

people often perceive themselves as worse off than others (Steers et al., 2014; Vogel et al., 2014). Other mechanisms include *the fear of missing out (FOMO)*—a persuasive apprehension that other people in one’s social network may have more rewarding experiences that one is absent from (Przybylski et al., 2013). Research showed that FOMO may mediate how social media is associated with lower self-esteem and higher online vulnerability (Buglass et al., 2017). Authors suggest that individuals with a deep fear of missing out tend to engage in more online self-presentation to compensate for their lack of control over personal lives. Self-disclosure or self-presentation on social media, however, may increase one’s exposure to harmful content and harassment and one’s overall vulnerability to toxic discourse online (Buglass et al., 2017).

Last, while much work in our meta-analysis examined the direction from use to well-being, a few studies focused on the other direction: investigating how one’s well-being status shapes social media use. The category of motivation involves the desire, preference, or need that provides the rationale for why individuals varying in well-being status or characteristics engage in social media use. Prime examples of motivation include social compensation and comparison. *Social compensation* refers to the motive of using social media to compensate for inadequate offline social experiences (J.-E. R. Lee et al., 2012). Articles in our database suggest that lonely people are motivated to compensate for their poor offline network by engaging in more online self-disclosure on social media (Hood et al., 2018). Adolescents feeling left out by friends reported a higher motive to compensate for social skills through Facebook (Teppers et al., 2014).

While *social comparison* serves as a psychological mechanism, as discussed earlier, this tendency to compare oneself with others having a better life can be a consequence of one’s well-being status. Using two-wave longitudinal data, Frison and Eggermont (2016) found that people with lower life satisfaction tend to engage in negative comparison on Facebook, whereas negative comparison on Facebook also reduced life satisfaction later. The authors argued that the finding aligns with the selective exposure theory that people dissatisfied with life offline tend to use social media in a similar way: They are motivated to gain information about others to understand themselves and the social world.

Behavioral Dynamics

Finally, social media use can affect well-being through behavioral dynamics. *Displacement/reinforcement* is a set of theoretical perspectives that predict social media use can either reduce or augment actual face-to-face communication (Kraut et al., 1998). Studies in our database generally supported the reinforcement perspective. For example, using two-wave longitudinal data with a 6-month interval, Dienlin et al. (2017) found a positive longitudinal effect of social media use on face-to-face interaction and life satisfaction. Rui et al. (2015), using survey data, showed a positive association between social information seeking on Facebook and offline activities.

METHODOLOGICAL ISSUES

When examining the methodological choices employed in the studies in our meta-analysis, we noticed a number of recurring challenges that limit the conclusions we can draw from existing work. The first is an overreliance on measures of time spent on social media as a measure of social media use compared with other potential measures of interest, such as the type of connections one has in their network and the type of content one is exposed to. The second is a lack of adequately validated scales used to measure social media use, which are often adopted from other media use scales or have significant overlap with the dependent variables researchers are trying to measure. The third is the overwhelming prevalence of cross-sectional studies about social media use and well-being. Last is the insufficient attention paid to questionnaire design in most studies of social media, despite past work emphasizing the importance of survey methodology.

Overreliance on Time Spent as a Measure of Social Media Use

Scholars have been discussing challenges for the measurement of media exposure for several decades. Overreliance on measures that approximate social media use as time spent on the platform, such as the number of times checking a specific social media platform per day, or the duration of time spent on the platform, is not a new problem in media research.

For instance, the growing popularity of television in the 1950s prompted numerous studies on the effects of time spent viewing television on aggressive behavior, sleep disturbances, and mental health (Feshbach & Singer, 1971; Owens et al., 1999; Sirgy et al., 1998). Research on media effects of television, and even older media such as radio, focused on time spent as the predictor variable have had broad and long-lasting impacts on policies like program ratings (Hamilton, 1998/2000) and panicked attitudes toward new technologies (Orben, 2020; Wartella & Reeves, 1985). However, as aptly noted by Junco (2013), “drivers often estimate driving distances in miles and time to destination” but people using media “typically do not estimate frequency and intensity of use in time” (p. 630). In terms of research on digital technologies, Boase and Ling (2013) found that 40% of studies in communication journals about mobile phone use relied on self-report measures of time spent on the phone.

Among others, self-report measurements of media exposure of time spent suffer from only moderate reliability, low predictive power, and low criterion validity (Boase & Ling, 2013). Additionally, social desirability bias and perceptions of norms mean that “heavy” users of a medium are more likely to underestimate their usage, whereas “light” users tend to overestimate, so that a regression to the mean effect occurs (Scharkow, 2016). Some researchers claim that participants may produce estimates of time spent up to 5 times more than their actual time spent (Junco, 2013). These effects may also be compounded by the reliance on single-item measures of social media use, such as “How much time did you spend on social media today?”

Lack of Validated Social Media Use Scales

To gain a more robust understanding of social media use and its consequences, researchers have created dozens of different scales. However, these scales are often modified without validation, rely on very few items, and/or focus on the frequency or duration of social media behaviors (Jenkins-Guarnieri et al., 2013). Even measurements adapted from general smartphone use scales may not be enough to gain a better understanding of social media use because individuals often use a range

of devices to access social media content. Compounding this problem is that different devices may be associated with different types of response errors, such as tablet users underreporting their internet use (Araujo et al., 2017). Further, digital media use is well-integrated into daily life, meaning that the activities people engage in are likely to be viewed as more mundane, making attentiveness and accurate self-reports even more of a challenge (Vanden Abeele et al., 2013). Ellis (2019) argued that current scales examining digital media use lack validity because of their inability to predict “comparatively simple behaviors that appear to be stable within participants” (p. 61). Recent work also indicates that many of these scales, even those that are seemingly distinct, are measuring the same construct, and that there is substantial overlap with mental health scales (Davidson et al., 2020). Further, Scharnow (2019) claimed that these issues are aggravated if a researcher is interested in within-person effects because of the “moderate reliability and high stability” (p. 207) of responses, making it difficult to uncover behavioral nuances that may be driving outcomes.

Cross-Sectional Study Designs Dominate the Field

Since researchers often have limited resources to spend on any given study, they often face trade-offs when considering how to best allocate these resources. Cattell's (1952) “data box” heuristic provides an overview of three crucial choices; few researchers can collect data about (a) many variables from (b) many people over (c) many time points. Until recently, most scholars of social media, and scholars of human behavior in general, have focused their resources on *interindividual* analyses—or the “variables” and “persons” dimensions of the data box (Molenaar & Campbell, 2009). Our meta-analysis indicated that over 75% of studies examining social media and well-being used cross-sectional methods. And even though longitudinal studies typically neglect variables for the sake of additional temporal information, they also tend to focus on interindividual analyses rather than *intraindividual* ones. Further, there has been a lack of experimental studies in this research area as well, with only 2% of studies in our meta-analysis employing this method. All of these choices can be justified,

and all have various advantages and disadvantages, but they necessarily limit the types of questions a researcher can ask and the resulting claims they can make.

Insufficient Attention to Questionnaire Design

Another challenge researchers face is how participants will interpret the questions and response options within the survey. Table 6.2 summarizes

Table 6.2

Summary of Methodological Issues Observed in the Literature

Methodological issue	Examples	Potential solutions
Overreliance on time spent as a proxy for social media use	28% of the effect sizes in our meta-analysis used numerical frequency or duration-based measures of social media use. Most subjective measures also asked about time spent (e.g., “a lot”). Reliance on general single-item measures	Emphasize other aspects of use with more predictive power, like content and network connections, and beliefs about social media
Lack of adequately robust social media use scales	Modifying other media use scales without appropriate validation Overlap with mental health scales	Focus on aspects and/or affordances exclusive to social media Gather log data for validation when possible
Cross-sectional study designs dominate the field	75% of studies in our meta-analysis used cross-sectional study designs.	Integrate longitudinal and experimental study designs into research plan to better understand causality and directionality of relationships
Insufficient attention to questionnaire design	Lack of adherence to best practices for question wording and question order	Ask more specific questions (e.g., about different devices) Critically consider the impact of effects such as priming that may bias results

methodological issues in previous research. There has been a great deal of work from scholars in the field of psychometrics or survey design discussing the advantages and disadvantages of drafting questionnaires in different ways (e.g., Tourangeau et al., 2000), but best practices are not commonly employed in social media studies or in media studies in general. Junco (2013) contended that a prevalent issue in social media use measurement is the lack of specificity in question wording, which could impact the recall and estimation portions of the response process. Scholars of both traditional and digital media have also emphasized the distinction between passive and active use (Verduyn et al., 2015). Recent work has attempted to parse these distinctions through studying battery usage and screen time separately using log data (Hodes & Thomas, 2021), but this may not be theoretically sufficient, as people may be passive “lurkers” yet deeply engaged in the content they’re viewing. Likewise, people may seem like active “clickers” but in reality are indiscriminately engaging with all content (Ellison et al., 2020).

In addition to biases in question wording, biases might also arise from the order in which questions are presented. A common issue in survey design is *priming*, which refers to the implicit memory effects of exposure to prior stimuli on responses to later stimuli (Cesario, 2014). In a survey, this might mean that the order of questions on a survey influences responses (Tourangeau & Rasinski, 1988). Priming effects can alter responses to a wide variety of questions, including those about attitudes, behavior, demographic information, and well-being. For example, Fox and Kahneman (1992) noted that questions about one’s dating life affected responses to a later question about life satisfaction, but that answering a question about life satisfaction first did not impact responses to questions about dating life. Similar effects have also been found in studies about current mood and more general subjective well-being (Diener, 1994).

Recent research indicates that this phenomenon applies to the domain of social media use and well-being, as well (Mieczkowski et al., 2020). Over the course of two studies, the authors investigated the relationship between two common social media use scale types (addiction and intensity) and self-reported depression. Results suggested that answering questions about social media use before questions about depression could alter

responses to a well-validated, stable depression scale (the Beck Depression Inventory; Beck et al., 1996). However, they did not find evidence for the reverse—participants who answered the depression scale first did not report significant differences in depression, social media addiction, social media intensity, self-reported social media use, or logged screen time. Based on prior work on well-being (e.g., Pavot & Diener, 1993), it is possible that these priming effects could affect responses beyond self-reported depression, especially in the cases of more volatile well-being measures (e.g., state measurements of anxiety; Spielberger, 2010).

Although it is difficult statistically, financially, and cognitively to employ high-quality research methods when studying social media (Kobayashi & Boase, 2012), it is imperative that researchers make use of the resources they do have, so that academics and social media users alike have a better understanding of this technology. In the next section, we propose a number of methodological approaches, as well as potential concepts and populations, that social media and well-being scholars would benefit from integrating into their research.

MOVING THE FIELD FORWARD

Our review makes it clear that there are major challenges facing researchers working on social media and well-being. However, we are optimistic that these challenges can be overcome as the field matures. In particular, we see a need for novel methods for measuring social media use that go beyond time spent or frequency self-report measures. It is always painful to read a carefully designed and executed study that meticulously assessed the well-being dependent variable (e.g., depression, life satisfaction) with a validated and reliable scale but then measured social media use with a self-reported single item about social media (e.g., “On average, how much do you use social media per day?”). A crucial advance for the field will be the development and validation of new methods and measures around social media use. A second area that requires attention is the development of new frameworks and theories outlining how social media might be related to well-being. There are numerous studies that test the impact of passive versus active use or addictive versus nonaddictive use. However, this

narrow focus on a handful of mechanisms seems inadequate and under-theorized when considering the broad variety of potential pathways through which social media use might influence our well-being. Next, we lay out some new methodological approaches and novel theoretical concepts that can help researchers in the field to rethink social media's influence on our well-being.

A Need for New Methods

As the previous section makes clear, the field to date faces serious methodological limitations. There is no question that measuring media use is difficult. The habitual nature of digital media and its integration into people's daily lives means that participants in research often have a hard time answering questions about their use of social media (Ellis et al., 2019). We need to reconsider whether these common methods (e.g., cross-sectional, self-report studies) are appropriate for the research questions at hand. Slater (2004) argued that since media effects, by definition, happen over a period of time, it is necessary for researchers to conduct longitudinal and experimental studies.

A great example is the recent work by Allcott et al. (2020) that incorporated both longitudinal and field experimental strategies when they examined the impact of deactivating Facebook on subjective well-being over the course of several weeks. The authors were able to compare behavior and well-being across conditions and over time, providing a more comprehensive picture of the effects of social media on well-being. There are a number of ways that researchers can conduct studies longitudinally and/or experimentally. Simply asking questions via in situ experience sampling methods could reduce recall issues (Cohen & Lemish, 2003), even without the use of log-based measures.

For those interested in investigating social media use over time and with a high level of granularity, a framework like Screenomics (Reeves et al., 2021) is promising. Screenomics is an application that collects screenshots of a participant's device every 5 seconds. Studies using the Screenomics framework have demonstrated that individuals often engage in a wide variety of activities, even over the course of a relatively short time

scale (e.g., only a few minutes). An understudied aspect of social media use—the content someone views and interacts with on a platform—is easier to observe and quantify with this research design strategy. C.-j. Lee et al. (2008) noted that examining “exposure” through concepts like screen time “will be of limited use if the content of Internet exposure is poorly understood” (p. 19). Without understanding *what* people are looking at, it is difficult to make theoretical claims regarding the relationships between social media and well-being, or the mechanisms that underlie them.

To gain additional control over these variables, researchers could also consider simulating social media use with tools like Social Media TestDrive (DiFranzo et al., 2019). The tool creates a realistic experience on social media by providing an interface with common features such as a profile and news feed, as well as interactions (e.g., posts, comments) from others. Social Media TestDrive relies on preprogrammed bots to create the simulated experience and not real people, allowing the researchers to manipulate content in which they are interested in a controlled way that can easily be replicated across participants. For example, a researcher could study the effects of positive or negative reactions to a post in real time, under conditions that were already specified and can be held constant.

A Need for Novel Theories

In addition to developing new methods for moving the field forward, we also believe that some new and exciting theoretical directions have the promise of advancing the field beyond the oversimplified question of whether social media use is good or bad for us. Here are some of the concepts that we think have the potential to reshape the field.

Toward a More Functional Approach

In recent years there has been a growing interest in various contexts where social media use is associated with well-being. An active research line is to understand how different types of use and content moderate the association between use and well-being. Verduyn et al. (2015) provided a carefully and explicitly articulated analysis of use, which argues that passive use

triggers social comparison and negative well-being outcomes while active use enhances social capital and improves well-being. Examination of use to date also includes but is not limited to addictive versus non-addictive, public versus private (e.g., Frison & Eggermont, 2015), high versus low effort use (e.g., status update vs. one-click; Burke & Kraut, 2016), image based versus text based (Pittman & Reich, 2016), and ephemeral versus persistent (Bayer et al., 2016).

Given a wide range of features and affordances of social media, the conceptualization and operationalization of social media use continue to grow and become more complex. One of our central arguments after reviewing this field is that researchers need to take a more functional approach to understanding people's use of social media that goes beyond time spent or frequency—a perspective of examining what people are trying to accomplish when they use social media, what goals and needs are being met, along with what kind of content they are engaging with and with whom. For example, self-presentation is a major social media use behavior and a core mechanism that links use to well-being, and authenticity is an important dimension of self-presentation. As shown in prior research, people felt more positive (or negative) after sharing positive (or negative) personal events (Choi & Toma, 2014). Authentic self-presentation is shown to correspond to better well-being outcomes, including higher self-esteem (Yang et al., 2017), life satisfaction, positive affect, and mood (Bailey et al., 2020), whereas unauthentic self-presentation can make people feel less socially connected, less satisfied with life (Bailey et al., 2020), and more stressful (Grieve & Watkinson, 2016). Similarly, the psychological implications of social sharing may depend on the valence of the shared content, such that people felt more positive (or negative) after sharing positive (or negative) personal events (Choi & Toma, 2014). We need more of this kind of work that looks at how people use social media and connects that use theoretically to well-being outcomes.

Taking Individual Differences Seriously

Individual-level characteristics also play a significant role in the association between social media use and well-being. A nice example is related to the classic debate, ongoing since the early days of social media research,

over who benefits the most from social media use. Specifically, the “rich get richer” hypothesis argues that socially rich people would acquire more social capital by using social media as an additional avenue to leverage existing social resources offline. “Poor get richer” argues that using social media may compensate for some people’s deficient offline social capital. Novel findings from a recent meta-analysis (Cheng et al., 2019) suggested that while both extroverts and socially anxious people tend to engage in a higher level of social media, only extroverts can reap the benefits of greater online social capital, bearing out the “rich-get-richer” hypothesis. Along with this rationale, personality traits can not only directly affect use but also moderate the use and well-being outcomes. Future research should continue examining how individual differences affect (a) how much and what types of social media to use, and (b) how such use affects well-being outcomes differently.

Rethinking Social Media and Addiction

One of the most common concerns in the popular discourse about social media is its potentially addictive nature. As the prevalence of social media use has increased worldwide, so have the claims associating it with addiction. A great deal of research has focused on connections between social media addiction and a number of unfortunate outcomes, such as poor academic achievement, cognitive impairments, and mental health problems. According to a study by Statistics Netherlands (2018), an estimated 30% of social media users in that country suffer from social media addiction—a massive increase from the 3% global prevalence of substance use disorders (World Health Organization, 2010). If this claim is accurate and generalizable, then a problem of such magnitude certainly warrants the amount of scientific investigations being conducted, in addition to collaborations with government and healthcare officials alike.

Unfortunately, it is not clear whether social media addiction is as prolific as some scholars argue. In fact, there might not be evidence to suggest that social media addiction—defined using concepts from substance use and behavioral addictions—is even the underlying problem at all. Although the original article search for our meta-analysis showed that there were thousands of scholarly articles examining social media addiction,

many lack appropriate theoretical and methodological frameworks to discover whether or not an individual is suffering from social media addiction, much less a robust relationship between social media addiction and any sort of negative outcomes.

If social media addiction is a disorder of the same type as substance use disorders and other behavioral addictions, then it may be symptomatic in similar ways. The symptoms typically do not appear all at once—instead, addiction is often considered a “process” during which an individual has distinct motives to pursue certain effects. Sometimes the individual loses and regains these motives, which is why the process is often thought of as cyclical. Addiction scholars have highlighted a number of well-accepted and common symptoms, including mood modification, salience, tolerance, withdrawal, negative consequences (“conflict”) and relapse (Griffiths, 2005). Furthermore, addiction is typically characterized by feelings of “loss of control” (Sussman & Sussman, 2011).

Unlike in clinical psychological work, there are numerous psychometric assessments used to diagnose social media addiction, as well as its aliases (see Mieczkowski et al., 2020, for examples). However, in the same vein as other addiction scholars, social media researchers have focused their efforts on diagnosing social media addiction with most of the aforementioned symptomatic criteria. One of the most common addiction scales is the Bergen Facebook Addiction scale (Andreassen et al., 2012). This scale focuses on salience (“How often during the last year . . . spent a lot of time thinking about Facebook or planned use of Facebook?”), tolerance (“ . . . felt an urge to use Facebook more and more?”), mood modification (“ . . . used Facebook in order to forget about personal problems?”), relapse (“ . . . tried to cut down on the use of Facebook without success?”), withdrawal (“ . . . become restless or troubled if you have been prohibited from using Facebook?”) and conflict (“ . . . used Facebook so much that it has had a negative impact on your job/studies?”).

However, most studies on social media addiction have relied solely on cross-sectional, self-report measures of addiction, so the potential *causal* relationships between variables such as addictive symptoms and negative outcomes cannot be unearthed. Panova and Carbonell (2018) argued that there are six main concerns regarding the current body of research on

smartphone addiction, which could be applicable to social media as well: (a) “a lack of longitudinal studies” that would allow researchers to observe the cyclical nature of the addictive process; (b) invalid “screening instruments” for diagnosis; (c) “a large probability of false positives”; (d) “arbitrarily designed” questionnaires; (e) an overreliance on “self-report data, which are collected using convenience samples”; and (f) major inconsistencies in “methodology, definitions, measurement, cut-off scores, and diagnostic criteria across studies.” When considering these issues, it is not clear that social media addiction exists in the form that scholars are currently studying it. In order to shed light on social media addiction and remedy the theoretical and methodological problems within this area of research, we argue that scholars need to reconceptualize the current nature of social media addiction.

Perhaps one of the biggest challenges social media addiction researchers face is the current diagnostic criteria. Imagine that a participant responds to a social media addiction questionnaire and indicates that they used social media to lessen feelings of anxiety, attempted to use social media for fewer hours per day but failed, and felt distress when they could not use social media for long periods of time. With the current social media addiction diagnostic criteria, a researcher would likely assume this participant is addicted to social media because they show symptoms of mood modification, loss of control, and withdrawal. Yet these behaviors might be indicative of other issues or even productive functioning in this participant’s life. They may feel anxious due to their home environment and use social media to connect with friends. They may have received a recent promotion at work that requires them to spend more time on social media coordinating with colleagues. They may be waiting for an important message from a relative that they don’t want to miss.

In 2018, only 55.3% of the adult population in the United States reported drinking in the past month, compared with upwards of 70% of adults who use social media (Perrin & Anderson, 2019; U.S. Department of Health and Human Services, 2019). Unlike alcohol or drug use, social media use is tightly integrated into many aspects of life for a majority of the population. Additionally, due to the private nature of social media use, it is difficult for people to make accurate assumptions about what activities

someone might be engaging in. Furthermore, in the United States, there are no legal restrictions on social media use.

As such, measuring social media addiction with the same self-reported diagnostic criteria as other addictions proves erroneous at best and completely misrepresentative at worst. Even the presumably “simple” measurement of time spent on social media as a way to infer tolerance has numerous confounds (King et al., 2018). People suffering from addiction often experience “time distortion,” meaning that they could not provide accurate reports of time spent engaging in the addictive behavior even if they were motivated to (Hirschman, 1992; Lin et al., 2015). Even objective measures of time spent on social media are typically not as explanatory as frequency-based measurements, such as how often a user checks their notifications (H. Lee et al., 2014).

Measuring other common symptoms, such as mood modification, may be equally challenging, as social media use has been shown to affect mood both positively and negatively (Mark et al., 2014; Sagioglou & Greitemeyer, 2014). If both “addicted” and “nonaddicted” social media users report mood modification symptoms, the measurement has low discriminant validity, which provides little helpful information for the researcher. Additionally, symptoms of withdrawal in the form of an individual feeling distressed when they cannot use social media may not be indicative of addiction considering the “functional dependence” most of the general public has to digital technology (Parent & Shapka, 2020, p. 183). Without social media, many people would have to “restructure[e] and adapt . . . regular activities” (Panova & Carbonell, 2018, p. 254), an inherently stressful process.

The role of social media in daily life is both qualitatively and quantitatively different from the role of alcohol, drugs, or other behavioral addictions. As such, new theoretical and methodological avenues are necessary to understand the components of social media addiction that do not pathologize everyday behaviors for billions of people.

Considering Mindsets

Quantifying the amount and the types of social media use has been the primary approach to explore the relationship between social media use

and well-being. Yet, our meta-analysis indicated that this approach has limitations and that the way people think about social media may matter (e.g., “it’s addictive”) more than how much they actually use it. We have therefore started to focus on social media mindsets, which refer to the beliefs, expectations, and feelings users have about social media use (A. Y. Lee et al., 2021).

Mindsets are mental frames that selectively organize and encode information, orienting an individual toward a unique way of understanding an experience and guiding one’s actions and responses (Dweck, 2008). Mindsets provide mental shortcuts by shaping people’s attention, behavior, cognition, and expectations. Previous research has found that people with more adaptive mindsets about intelligence, stress, or even illness have better physiological and mental health than those with maladaptive mindsets (Claro et al., 2016; Crum et al., 2013; Yeager & Dweck, 2012).

Our recent work suggests that there are mindsets for social media, as well. In one preliminary study (A. Y. Lee et al., 2021), we found evidence for two types of mindsets about social media use. In one mindset, people have control of social media use, and they view it positively. People with this kind of “social media as tool” mindset believe that social media is beneficial for them and serves a useful, meaningful purpose in their lives. In the second mindset, people feel that social media controls them, and they have an unsurprisingly negative view of social media. People holding this kind of “social media as addicting” mindset believe that social media is harmful and addictive.

Our initial work suggests that these mindsets are powerful. In one study, we found that social media mindsets can mediate the relationship between well-being outcomes, social media use measures, and depression (Miechowski et al., 2020). In another study, people with a tool mindset have positive well-being outcomes regarding social support, depression, anxiety, and stress, while people with an addiction mindset have negative outcomes concerning these well-being dimensions (A. Y. Lee et al., 2021). These studies suggest that perception of use has the potential to be more influential than use itself (Boase & Ling, 2013). We argue here that measuring mindsets around social media perceptions is an important area for future research.

Mechanisms of Blame

After discovering that effect sizes between social media use and well-being tend to be very small, we started wondering why the public discourse is so heavily based on the suggestion that social media can be harmful. One potential explanation is that people may consider the impact of the social media use of *other people* on their own well-being. Put differently, a person's social media use might diminish another person's well-being because high levels of social media use may detract from their relationship or social interaction. Imagine, for example, being ignored by a friend while they check their phone. Indeed, one study found that a partner's phone use was associated with increased depression in married couples (Wang et al., 2017). This indirect association between a person's social media use and another person's well-being is caused by ostracism, defined as excluding and ignoring by individuals or groups (Williams, 2009).

Previous studies have focused on *phubbing*, the behavior of one person ignoring another person due to phone use. Individuals are shut out of social interaction while remaining in the physical presence of other people (Chotpitayasunondh & Douglas, 2018). This type of phone-related social ostracism is associated with a decreased social connection (Kushlev & Heintzelman, 2018), reduced sense of mattering (Kadylak, 2020) and sense of belonging (Hales et al., 2018), and increased distress and depression (Gonzales & Wu, 2016; Wang et al., 2020).

Social media use can induce ostracism, as well. People seem to infer social media use in a phubbing scenario. We conducted a study and asked participants what they thought the other person was doing when using the phone. We gave the five most popular uses of the phone as options and found that almost two thirds of participants believed that the other person was checking social media (Liu & Hancock, 2020). This automatic inference of phone use to social media use in a phubbing scenario can not only undermine people's well-being if they are frequently being ostracized but also magnify people's concerns and resentment of social media.

How people interpret social technology-related ostracism has implications for well-being. Attribution theory (Kelley & Michela, 1980) provides a valuable framework to explore how people perceive these types of

social ostracism and how they infer causes based on their self-interest and motivations. Classic attribution theory posits a person (self) versus situation (external) classification of causes. In general, people attribute positive outcomes to themselves while deflecting blame and attributing negative consequences to situations (Kelley & Michela, 1980).

There are multiple possible sources of external attributions for social technology-related ostracism, ranging from blaming the other person, to the context, to the technology. Other work examining attributions regarding technology in social dynamics have applied three types of external attributions: dispositional attribution, situational attribution, and interpersonal attribution. When people attribute actions to the partner's personality and disposition, it is a dispositional attribution. When people believe that context and environmental factors impact the action, it is a situational attribution. When people think that the nature or characteristics of the relationship affect the action, it is an interpersonal disposition (Jiang et al., 2011; Walther et al., 2016).

We developed and measured a new source of external attribution: the technology itself. We applied attribution theory and conducted five experimental studies to examine how people perceive phone-related ostracism and the degree to which people blame the person doing the ostracizing in a phubbing scene or whether they blame the phone (S. X. Liu & Hancock, 2020). We found that across various conditions, people overattribute to the phone, and phone attribution was a significant predictor of beliefs about the negative consequences of phone use, beliefs of the addictive framing of the phone, and support for strict phone use regulations. However, blaming the phone may reduce psychological harms to self-esteem and produce well-being benefits. It hurts less to blame the phone than to blame the self, the partner, or the relationship between the self and the partner. Attribution theory provides a useful guide to explore the mechanisms linking social technology use, attributional dynamics, personal well-being, and societal consequences of social technology use.

Highlighting the Role of Culture and Different Populations

Although culture is likely to have an impact on the relationship between social media and well-being, few studies to date have examined this influ-

ence directly. This is especially important given that social media platforms are common across cultures and countries as tech companies such as Facebook have aggressively expanded their international markets. Although social media platforms and tools differ somewhat across cultures, the main affordances and features of social media are similar. Our meta-analysis hints at important cultural differences in our findings across geographic locations. While geographic location is not isomorphic with culture, it can serve as a very rough proxy. Studies conducted in Asia reported an overall positive relationship between social media use and well-being, whereas studies conducted in Europe showed the opposite relationship. This pattern suggests that participants in Asia have a more positive experience and perspective regarding social media and well-being than Europeans, who appear to have a much more negative experience and perspective.

More research into how different cultures experience social media and well-being is needed. People in different cultures domesticate social media platforms in culturally unique ways. Well-being also varies across culture. Psychologists have been debating cultural questions for decades, such as whether well-being is composed of the same or of different components across cultures. Previous research has accumulated abundant evidence that well-being differs across cultures regarding its causes, components, and effects (Diener et al., 2017). Besides the differences in how people use social media and how well-being varies across cultures, the mechanisms that link social media use and well-being may also be distinct across cultures. For example, social capital gathered on social media can be very different in collectivistic cultures than in individualistic cultures. Delineating cultural similarities and cultural differences at both the individual and the cultural level is a key stride in social media and well-being research.

Finally, given how widespread the concerns are about social media, and how widespread its use is, another issue is the lack of diversity represented in addressing the question of social media and well-being. The points of view in *The Social Dilemma*, for example, are limited to mostly White, mostly young, former technology workers providing their insights about how and why social media technologies were developed. This perspective, while valuable for understanding the design of these systems, omits

many other perspectives, with very little representation of people of color, people from different socioeconomic classes, or people from different cultures. We need more research with more diversity of perspectives. For example, although seniors, usually defined as adults age 55 and above, are now one of the fastest growing and largest populations using social media, there were too few studies for us to examine the relationship in this particular population. How social media use affects well-being for older adults is hence a pressing and important avenue for future research.

CONCLUSION

In *The Social Dilemma*, all social media use is considered equal, and the more people use it, the more harmful it is. Our review of the science and the substantial field of evidence collected over more than a decade suggests that the relationship between social media use and well-being is far less sinister and much more complicated. Rather than the simplistic “more is worse” heuristic, our review reveals that it matters how we use social media, that the effects are quite small, varied, and most likely not a simple causal effect. People have agency. They use social media to accomplish goals and fulfill needs.

One of our high-level conclusions after this massive undertaking is that *psychology beats technology* when it comes to understanding how social media use is related to well-being. Although media and technology researchers tend to emphasize the effects of technology, it is clear from our review that psychological dynamics matter more. What matters is how we use social media, in which context, and for which purposes. For example, using social media to connect with an old friend is very different from mindlessly scrolling through a social media feed. To accomplish a more nuanced perspective on the relationship between social media and well-being, we must move beyond simple self-report of time spent or frequency of using social media towards a more functional approach to social media use that takes into considerations a person’s goals, motivations, and needs. A second implication is that we need new concepts and theories that actually connect the specific use of social media to well-being outcomes. Assuming that social comparison or social compensation are

playing a role is no longer sufficient; instead, research needs to articulate these connections, measure them, and test them in order for the field to move forward.

Finally, we need to take seriously the populations we are studying. Different populations have radically different experiences on social media. When we move away from commonly used college student samples or WEIRD (White, educated, industrialized, rich, and democratic) populations, we see nuanced dynamics between social media use and well-being. Even within WEIRD populations, the well-being of teenagers versus seniors are radically different moving through their developmental trajectory (Boyd, 2014; Hargittai & Dobransky, 2017). With different needs, goals, and motivations, the role of social media in a teenager's well-being is likely to be very different from that of a retired person. Our field can gain fundamental theoretical and practical insights by paying attention to underrepresented populations, such as Black or Latino communities, rather than assuming White populations as the default (e.g., Bennett et al., 2012; Brock, 2020; Patton et al., 2019). Although digital literacy and phone use vary significantly across populations, the wide adoption of smartphones across the globe provides an opportunity to study hard-to-reach groups that are underrepresented in traditional media studies. Our field needs to conduct research with these populations.

Finally, social media use is not a dosage, and interactions on social media are not medical procedures. The faster we depart from an oversimplified *Social Dilemma* style of social media addiction, the sooner we can discover interventions and inform public policies that can promote well-being across diverse populations.

REFERENCES

- Ahn, D., & Shin, D. H. (2013). Is the social use of media for seeking connectedness or for avoiding social isolation? Mechanisms underlying media use and subjective well-being. *Computers in Human Behavior*, 29(6), 2453–2462. <https://doi.org/10.1016/j.chb.2012.12.022>
- Allcott, H., Braghieri, L., Eichmeyer, S., & Gentzkow, M. (2020). The welfare effects of social media. *American Economic Review*, 110(3), 629–676. <https://doi.org/10.1257/aer.20190658>

- Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports, 110*(2), 501–517. <https://doi.org/10.2466/02.09.18.PR0.110.2.501-517>
- Araujo, T., Wonneberger, A., Neijens, P., & de Vreese, C. (2017). How much time do you spend online? Understanding and improving the accuracy of self-reported measures of Internet use. *Communication Methods and Measures, 11*(3), 173–190. <https://doi.org/10.1080/19312458.2017.1317337>
- Bailey, E. R., Matz, S. C., Youyou, W., & Iyengar, S. S. (2020). Authentic self-expression on social media is associated with greater subjective well-being. *Nature Communications, 11*(1), 4889. <https://doi.org/10.1038/s41467-020-18539-w>
- Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision making. *Journal of Personality and Social Psychology, 60*(6), 941–951. <https://doi.org/10.1037/0022-3514.60.6.941>
- Bayer, J. B., Ellison, N. B., Schoenebeck, S. Y., & Falk, E. B. (2016). Sharing the small moments: Ephemeral social interaction on Snapchat. *Information Communication and Society, 19*(7), 956–977. <https://doi.org/10.1080/1369118X.2015.1084349>
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. Psychological Corporation.
- Bennett, L., Freelon, D. G., Hussain, M., & Wells, C. (2012). Digital media and youth engagement. In H. A. Semetko & M. Scammell (Eds.), *The SAGE handbook of political communication* (pp. 127–140).
- Best, P., Taylor, B., & Manktelow, R. (2015). I've 500 friends, but who are my mates? Investigating the influence of online friend networks on adolescent wellbeing. *Journal of Public Mental Health, 14*(3), 135–148. <https://doi.org/10.1108/JPMH-05-2014-0022>
- Boase, J., & Ling, R. (2013). Measuring mobile phone use: Self-report versus log data. *Journal of Computer-Mediated Communication, 18*(4), 508–519. <https://doi.org/10.1111/jcc4.12021>
- Boyd, D. (2014). *It's complicated: The social lives of networked teens*. Yale University Press.
- Brock, A., Jr. (2020). *Distributed Blackness: African American cybercultures*. New York University Press. <https://doi.org/10.18574/nyu/9781479820375.001.0001>
- Brooks, B., Hogan, B., Ellison, N., Lampe, C., & Vitak, J. (2014). Assessing structural correlates to social capital in Facebook ego networks. *Social Networks, 38*, 1–15. <https://doi.org/10.1016/j.socnet.2014.01.002>
- Buglass, S. L., Binder, J. F., Betts, L. R., & Underwood, J. D. (2017). Motivators of online vulnerability: The impact of social network site use and FOMO.

- Computers in Human Behavior*, 66, 248–255. <https://doi.org/10.1016/j.chb.2016.09.055>
- Burke, M., & Kraut, R. E. (2016). The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of Computer-Mediated Communication*, 21(4), 265–281. <https://doi.org/10.1111/jcc4.12162>
- Burrow, A. L., & Rainone, N. (2017). How many likes did I get? Purpose moderates links between positive social media feedback and self-esteem. *Journal of Experimental Social Psychology*, 69, 232–236. <https://doi.org/10.1016/j.jesp.2016.09.005>
- Cattell, R. B. (1952). The three basic factor-analytic research designs—their interrelations and derivatives. *Psychological Bulletin*, 49(5), 499–520. <https://doi.org/10.1037/h0054245>
- Cesario, J. (2014). Priming, replication, and the hardest science. *Perspectives on Psychological Science*, 9(1), 40–48. <https://doi.org/10.1177/1745691613513470>
- Chang, P. F., Choi, Y. H., Bazarova, N. N., & Löckenhoff, C. E. (2015). Age differences in online social networking: Extending socioemotional selectivity theory to social network sites. *Journal of Broadcasting & Electronic Media*, 59(2), 221–239. <https://doi.org/10.1080/08838151.2015.1029126>
- Cheng, C., Wang, H.-y., Sigerson, L., & Chau, C.-I. (2019). Do the socially rich get richer? A nuanced perspective on social network site use and online social capital accrual. *Psychological Bulletin*, 145(7), 734–764. <https://doi.org/10.1037/bul0000198>
- Chiou, W. B., Lee, C. C., & Liao, D. C. (2015). Facebook effects on social distress: Priming with online social networking thoughts can alter the perceived distress due to social exclusion. *Computers in Human Behavior*, 49, 230–236. <https://doi.org/10.1016/j.chb.2015.02.064>
- Choi, J., & Kim, H. J. (2016). Influence of SNS user innovativeness and public individuation on SNS usage patterns and social capital development: The case of Facebook. *International Journal of Human-Computer Interaction*, 32(12), 921–930. <https://doi.org/10.1080/10447318.2016.1220067>
- Choi, M., & Toma, C. L. (2014). Social sharing through interpersonal media: Patterns and effects on emotional well-being. *Computers in Human Behavior*, 36, 530–541. <https://doi.org/10.1016/j.chb.2014.04.026>
- Chotpitayasunondh, V., & Douglas, K. M. (2018). The effects of “phubbing” on social interaction. *Journal of Applied Social Psychology*, 48(6), 304–316. <https://doi.org/10.1111/jasp.12506>
- Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the effects of poverty on academic achievement. *Proceedings of the National Academy of Sciences*, 113(31), 8664–8668. <https://doi.org/10.1073/pnas.1608207113>

- Cohen, A. A., & Lemish, D. (2003). Real time and recall measures of mobile phone use: Some methodological concerns and empirical applications. *New Media & Society*, 5(2), 167–183. <https://doi.org/10.1177/1461444803005002002>
- Cohen, S., & Hoberman, H. M. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology*, 13(2), 99–125. <https://doi.org/10.1111/j.1559-1816.1983.tb02325.x>
- Crum, A. J., Salovey, P., & Anchor, S. (2013). Rethinking stress: The role of mindsets in determining the stress response. *Journal of Personality and Social Psychology*, 104(4), 716–733. <https://doi.org/10.1037/a0031201>
- Davidson, B. I., Shaw, H., & Ellis, D. A. (2020). *Fuzzy constructs: The overlap between mental health and technology “use.”* PsyArXiv. <https://doi.org/10.31234/osf.io/6durk>
- Deci, E., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer. <https://doi.org/10.1007/978-1-4899-2271-7>
- Deters, F. G., & Mehl, M. R. (2013). Does posting Facebook status updates increase or decrease loneliness? An online social networking experiment. *Social Psychological and Personality Science*, 4(5), 579–586. <https://doi.org/10.1177/1948550612469233>
- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research*, 31(2), 103–157. <https://doi.org/10.1007/BF01207052>
- Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., & Oishi, S. (2017). Findings all psychologists should know from the new science on subjective well-being. *Canadian Psychology/Psychologie Canadienne*, 58(2), 87–104. <https://doi.org/10.1037/cap0000063>
- Dienlin, T., Masur, P. K., & Trepte, S. (2017). Reinforcement or displacement? The reciprocity of FTF, IM, and SNS communication and their effects on loneliness and life satisfaction. *Journal of Computer-Mediated Communication*, 22(2), 71–87. <https://doi.org/10.1111/jcc4.12183>
- DiFranzo, D., Choi, Y. H., Purington, A., Taft, J. G., Whitlock, J., & Bazarova, N. N. (2019). Social media testdrive: Real-world social media education for the next generation. In *CHI'19: Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1–11). <https://doi.org/10.1145/3290605.3300533>
- Domahidi, E. (2018). The associations between online media use and users' perceived social resources: A meta-analysis. *Journal of Computer-Mediated Communication*, 23(4), 181–200. <https://doi.org/10.1093/jcmc/zmy007>
- Dweck, C. (2008). *Mindsets and math/science achievement* [Report]. The Opportunity Equation, Carnegie Corporation of New York.

- Ellis, D. A. (2019). Are smartphones really that bad? Improving the psychological measurement of technology-related behaviors. *Computers in Human Behavior*, 97, 60–66. <https://doi.org/10.1016/j.chb.2019.03.006>
- Ellis, D. A., Davidson, B. I., Shaw, H., & Geyer, K. (2019). Do smartphone usage scales predict behavior? *International Journal of Human-Computer Studies*, 130, 86–92. <https://doi.org/10.1016/j.ijhcs.2019.05.004>
- Ellison, N. B., Triêu, P., Schoenebeck, S., Brewer, R., & Israni, A. (2020). Why we don't click: Interrogating the relationship between viewing and clicking in social media contexts by exploring the “non-click.” *Journal of Computer-Mediated Communication*, 25(6), 402–426. <https://doi.org/10.1093/jcmc/zmaa013>
- Feshbach, S., & Singer, R. D. (1971). *Television and aggression*. Jossey-Bass.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140. <https://doi.org/10.1177/001872675400700202>
- Fox, C. R., & Kahneman, D. (1992). Correlations, causes and heuristics in surveys of life satisfaction. *Social Indicators Research*, 27(3), 221–234. <https://doi.org/10.1007/BF00300462>
- Frison, E., & Eggermont, S. (2015). The impact of daily stress on adolescents' depressed mood: The role of social support seeking through Facebook. *Computers in Human Behavior*, 44, 315–325. <https://doi.org/10.1016/j.chb.2014.11.070>
- Frison, E., & Eggermont, S. (2016). Exploring the relationships between different types of Facebook use, perceived online social support, and adolescents' depressed mood. *Social Science Computer Review*, 34(2), 153–171. <https://doi.org/10.1177/0894439314567449>
- Gonzales, A. L., & Wu, Y. (2016). Public cellphone use does not activate negative responses in others . . . Unless they hate cellphones. *Journal of Computer-Mediated Communication*, 21(5), 384–398. <https://doi.org/10.1111/jcc4.12174>
- Grieve, R., Indian, M., Witteveen, K., Tolan, G. A., & Marrington, J. (2013). Face-to-face or Facebook: Can social connectedness be derived online? *Computers in Human Behavior*, 29(3), 604–609. <https://doi.org/10.1016/j.chb.2012.11.017>
- Grieve, R., & Watkinson, J. (2016). The psychological benefits of being authentic on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 19(7), 420–425. <https://doi.org/10.1089/cyber.2016.0010>
- Griffiths, M. (2005). A “components” model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10(4), 191–197. <https://doi.org/10.1080/14659890500114359>
- Hales, A. H., Dvir, M., Wesselmann, E. D., Kruger, D. J., & Finkenauer, C. (2018). Cell phone-induced ostracism threatens fundamental needs. *The Journal of Social Psychology*, 158(4), 460–473. <https://doi.org/10.1080/00224545.2018.1439877>

- Hamilton, J. T. (Ed.). (2000). *Television violence and public policy*. University of Michigan Press. <https://doi.org/10.3998/mpub.15632> (Original work published 1998)
- Hancock, J. T., Liu, S. X., French, M., Luo, M., & Mieczkowski, H. (2019). *Social media use and well-being: A meta-analysis* [Paper presentation]. 69th Annual International Communication Association Conference, Washington, DC, United States.
- Hargittai, E., & Dobransky, K. (2017). Old dogs, new clicks: Digital inequality in skills and uses among older adults. *Canadian Journal of Communication*, 42(2), 195–212. <https://doi.org/10.22230/cjc.2017v42n2a3176>
- Heffer, T., Good, M., Daly, O., MacDonell, E., & Willoughby, T. (2019). The longitudinal association between social-media use and depressive symptoms among adolescents and young adults: An empirical reply to Twenge et al. (2018). *Clinical Psychological Science*, 7(3), 462–470. <https://doi.org/10.1177/2167702618812727>
- Hirschman, E. C. (1992). The consciousness of addiction: Toward a general theory of compulsive consumption. *The Journal of Consumer Research*, 19(2), 155–179. <https://doi.org/10.1086/209294>
- Hodes, L. N., & Thomas, K. G. (2021). Smartphone screen time: Inaccuracy of self-reports and influence of psychological and contextual factors. *Computers in Human Behavior*, 115, 106616. <https://doi.org/10.1016/j.chb.2020.106616>
- Hood, M., Creed, P. A., & Mills, B. J. (2018). Loneliness and online friendships in emerging adults. *Personality and Individual Differences*, 133, 96–102. <https://doi.org/10.1016/j.paid.2017.03.045>
- Jenkins-Guarnieri, M. A., Wright, S. L., & Johnson, B. (2013). Development and validation of a social media use integration scale. *Psychology of Popular Media Culture*, 2(1), 38–50. <https://doi.org/10.1037/a0030277>
- Jensen, M., George, M., Russell, M., & Odgers, C. (2019). Young adolescents' digital technology use and mental health symptoms: Little evidence of longitudinal or daily linkages. *Clinical Psychological Science*, 7(6), 1416–1433. <https://doi.org/10.1177/2167702619859336>
- Jiang, L. C., Bazarova, N. N., & Hancock, J. T. (2011). The disclosure–intimacy link in computer-mediated communication: An attributional extension of the hyperpersonal model. *Human Communication Research*, 37(1), 58–77. <https://doi.org/10.1111/j.1468-2958.2010.01393.x>
- Junco, R. (2013). Comparing actual and self-reported measures of Facebook use. *Computers in Human Behavior*, 29(3), 626–631. <https://doi.org/10.1016/j.chb.2012.11.007>

- Kadylak, T. (2020). An investigation of perceived family phubbing expectancy violations and well-being among U.S. older adults. *Mobile Media & Communication*, 8(2), 247–267. <https://doi.org/10.1177/2050157919872238>
- Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. *Annual Review of Psychology*, 31(1), 457–501. <https://doi.org/10.1146/annurev.ps.31.020180.002325>
- King, D. L., Herd, M. C., & Delfabbro, P. H. (2018). Motivational components of tolerance in Internet gaming disorder. *Computers in Human Behavior*, 78, 133–141. <https://doi.org/10.1016/j.chb.2017.09.023>
- Kobayashi, T., & Boase, J. (2012). No such effect? The implications of measurement error in self-report measures of mobile communication use. *Communication Methods and Measures*, 6(2), 126–143. <https://doi.org/10.1080/19312458.2012.679243>
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox. A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53(9), 1017–1031. <https://doi.org/10.1037/0003-066X.53.9.1017>
- Kushlev, K., & Heintzelman, S. J. (2018). Put the phone down: Testing a complement-interfere model of computer-mediated communication in the context of face-to-face interactions. *Social Psychological & Personality Science*, 9(6), 702–710. <https://doi.org/10.1177/1948550617722199>
- Lee, A. Y., Katz, R., & Hancock, J. (2021). The role of subjective construals on reporting and reasoning about social media use. *Social Media + Society*, 7(3). <https://doi.org/10.1177/205630512111035350>
- Lee, C.-j., Hornik, R., & Hennessy, M. (2008). The reliability and stability of general media exposure measures. *Communication Methods and Measures*, 2(1–2), 6–22. <https://doi.org/10.1080/19312450802063024>
- Lee, H., Ahn, H., Choi, S., & Choi, W. (2014). The SAMS: Smartphone addiction management system and verification. *Journal of Medical Systems*, 38(1), 1–10. <https://doi.org/10.1007/s10916-013-0001-1>
- Lee, J.-E. R., Moore, D. C., Park, E. A., & Park, S. G. (2012). Who wants to be “friend-rich”? Social compensatory friending on Facebook and the moderating role of public self-consciousness. *Computers in Human Behavior*, 28(3), 1036–1043. <https://doi.org/10.1016/j.chb.2012.01.006>
- Lin, Y.-H., Lin, Y. C., Lee, Y. H., Lin, P. H., Lin, S. H., Chang, L. R., Tseng, H. W., Yen, L. Y., Yang, C. C., & Kuo, T. B. (2015). Time distortion associated with smartphone addiction: Identifying smartphone addiction via a mobile application (app). *Journal of Psychiatric Research*, 65, 139–145. <https://doi.org/10.1016/j.jpsychires.2015.04.003>

- Liu, D., Ainsworth, S. E., & Baumeister, R. F. (2016). A meta-analysis of social networking online and social capital. *Review of General Psychology, 20*(4), 369–391. <https://doi.org/10.1037/gpr0000091>
- Liu, S. X., & Hancock, J. (2020). *People don't ostracize people, phones do: Attributional dynamics for ostracism associated with phubbing* [Paper presentation]. International Communication Association (ICA) 70th annual conference. Virtual conference.
- Mark, G., Iqbal, S., Czerwinski, M., & Johns, P. (2014). Capturing the mood: Facebook and face-to-face encounters in the workplace. In *CSCW'14: Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 1082–1094). <https://doi.org/10.1145/2531602.2531673>
- Mieczkowski, H., Lee, A. Y., & Hancock, J. T. (2020). Priming effects of social media use scales on well-being outcomes: The influence of intensity and addiction scales on self-reported depression. *Social Media+ Society, 6*(4), 1–15. <https://doi.org/10.1177/2056305120961784>
- Molenaar, P. C., & Campbell, C. G. (2009). The new person-specific paradigm in psychology. *Current Directions in Psychological Science, 18*(2), 112–117. <https://doi.org/10.1111/j.1467-8721.2009.01619.x>
- Morse, S., & Gergen, K. J. (1970). Social comparison, self-consistency, and the concept of self. *Journal of Personality and Social Psychology, 16*(1), 148–156. <https://doi.org/10.1037/h0029862>
- Neubaum, G., & Krämer, N. C. (2015). My friends right next to me: A laboratory investigation on predictors and consequences of experiencing social closeness on social networking sites. *Cyberpsychology, Behavior, and Social Networking, 18*(8), 443–449. <https://doi.org/10.1089/cyber.2014.0613>
- Orben, A. (2020). The Sisyphean cycle of technology panics. *Perspectives on Psychological Science, 15*(5), 1143–1157. <https://doi.org/10.1177/1745691620919372>
- Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behaviour, 3*(2), 173–182. <https://doi.org/10.1038/s41562-018-0506-1>
- Owens, J., Maxim, R., McGuinn, M., Nobile, C., Msall, M., & Alario, A. (1999). Television-viewing habits and sleep disturbance in school children. *Pediatrics, 104*(3), e27. <https://doi.org/10.1542/peds.104.3.e27>
- Panova, T., & Carbonell, X. (2018). Is smartphone addiction really an addiction? *Journal of Behavioral Addictions, 7*(2), 252–259. <https://doi.org/10.1556/2006.7.2018.49>
- Parent, N., & Shapka, J. (2020). Moving beyond addiction: An attachment theory framework for understanding young adults' relationships with their smartphones. *Human Behavior and Emerging Technologies, 2*(2), 179–185. <https://doi.org/10.1002/hbe2.180>

- Patton, D. U., Leonard, P., Elaesser, C., Eschmann, R. D., Patel, S., & Crosby, S. (2019). What's a threat on social media? How Black and Latino Chicago young men define and navigate threats online. *Youth & Society*, 51(6), 756–772. <https://doi.org/10.1177/0044118X17720325>
- Pavot, W., & Diener, E. (1993). The affective and cognitive context of self-reported measures of subjective well-being. *Social Indicators Research*, 28(1), 1–20. <https://doi.org/10.1007/BF01086714>
- Perrin, A., & Anderson, M. (2019, April 10). *Share of U.S. adults using social media, including Facebook, is mostly unchanged since 2018*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2019/04/10/share-of-u-s-adults-using-social-media-including-facebook-is-mostly-unchanged-since-2018/>
- Pittman, M., & Reich, B. (2016). Social media and loneliness: Why an Instagram picture may be worth more than a thousand Twitter words. *Computers in Human Behavior*, 62, 155–167. <https://doi.org/10.1016/j.chb.2016.03.084>
- Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in Human Behavior*, 29(4), 1841–1848. <https://doi.org/10.1016/j.chb.2013.02.014>
- Reeves, B., Ram, N., Robinson, T. N., Cummings, J. J., Giles, C. L., Pan, J., Chiatti, A., Cho, M., Roehrick, K., Yang, X., Gagneja, A., Brinberg, M., Muise, D., Lu, Y., Luo, M., Fitzgerald, A., & Leo Yeykelis, L. (2021). Screenomics: A framework to capture and analyze personal life experiences and the ways that technology shapes them. *Human-Computer Interaction*, 36(2) 150–201. <https://doi.org/10.1080/07370024.2019.1578652>
- Rui, J. R., Covert, J. M., Stefanone, M. A., & Mukherjee, T. (2015). A communication multiplexity approach to social capital: On-and offline communication and self-esteem. *Social Science Computer Review*, 33(4), 498–518. <https://doi.org/10.1177/0894439314552803>
- Sagioglou, C., & Greitemeyer, T. (2014). Facebook's emotional consequences: Why Facebook causes a decrease in mood and why people still use it. *Computers in Human Behavior*, 35, 359–363. <https://doi.org/10.1016/j.chb.2014.03.003>
- Scharkow, M. (2016). The accuracy of self-reported internet use—A validation study using client log data. *Communication Methods and Measures*, 10(1), 13–27. <https://doi.org/10.1080/19312458.2015.1118446>
- Scharkow, M. (2019). The reliability and temporal stability of self-reported media exposure: A meta-analysis. *Communication Methods and Measures*, 13(3), 198–211. <https://doi.org/10.1080/19312458.2019.1594742>
- Schemer, C., Masur, P. K., Geiß, S., Müller, P., & Schäfer, S. (2020). The impact of Internet and social media use on well-being: A longitudinal analysis of adolescents across nine years. *Journal of Computer-Mediated Communication*, 26(1), 1–21. <https://doi.org/10.1093/jcmc/zmaa014>

- Seo, M., Kim, J., & Yang, H. (2016). Frequent interaction and fast feedback predict perceived social support: Using crawled and self-reported data of Facebook users. *Journal of Computer-Mediated Communication*, 21(4), 282–297. <https://doi.org/10.1111/jcc4.12160>
- Sirgy, M. J., Lee, D. J., Kosenko, R., Lee Meadow, H., Rahtz, D., Cicic, M., Jin, G. X., Yarsuvat, D., Blenkhorn, D. L., & Wright, N. (1998). Does television viewership play a role in the perception of quality of life? *Journal of Advertising*, 27(1), 125–142. <https://doi.org/10.1080/00913367.1998.10673547>
- Slater, M. D. (2004). Operationalizing and analyzing exposure: The foundation of media effects research. *Journalism & Mass Communication Quarterly*, 81(1), 168–183. <https://doi.org/10.1177/107769900408100112>
- Spielberger, C. D. (2010). State-Trait anxiety inventory. *The Corsini encyclopedia of psychology*. John Wiley & Sons, Inc. <https://doi.org/10.1002/9780470479216.corpsy0943>
- Statistics Netherlands. (2018, May 18). *More and more young adults addicted to social media*. <https://www.cbs.nl/en-gb/news/2018/20/more-and-more-young-adults-addicted-to-social-media>
- Steers, M. L. N., Wickham, R. E., & Acitelli, L. K. (2014). Seeing everyone else's highlight reels: How Facebook usage is linked to depressive symptoms. *Journal of Social and Clinical Psychology*, 33(8), 701–731. <https://doi.org/10.1521/jscp.2014.33.8.701>
- Sussman, S., & Sussman, A. N. (2011). Considering the definition of addiction. *International Journal of Environmental Research and Public Health*, 8(10), 4025–4038. <https://doi.org/10.3390/ijerph8104025>
- Teppers, E., Luyckx, K., Klimstra, T. A., & Goossens, L. (2014). Loneliness and Facebook motives in adolescence: A longitudinal inquiry into directionality of effect. *Journal of Adolescence*, 37(5), 691–699. <https://doi.org/10.1016/j.adolescence.2013.11.003>
- Tourangeau, R., & Rasinski, K. A. (1988). Cognitive processes underlying context effects in attitude measurement. *Psychological Bulletin*, 103(3), 299–314. <https://doi.org/10.1037/0033-2909.103.3.299>
- Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511819322>
- Twenge, J. M. (2020). Increases in depression, self-harm, and suicide among U.S. adolescents after 2012 and links to technology use: Possible mechanisms. *Psychiatric Research & Clinical Practice*, 2(1), 19–25. <https://doi.org/10.1176/appi.prcp.20190015>
- Uchino, B. N. (2004). *Social support and physical health: Understanding the health consequences of relationships*. Yale University Press. <https://doi.org/10.12987/yale/9780300102185.001.0001>

- U.S. Department of Health and Human Services. (2019). *2018 National Survey on Drug Use and Health: Summary of national findings*. Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/release/2018-national-survey-drug-use-and-health-nsduh-releases>.
- Vanden Abeele, M., Beullens, K., & Roe, K. (2013). Measuring mobile phone use: Gender, age and real usage level in relation to the accuracy and validity of self-reported mobile phone use. *Mobile Media & Communication*, 1(2), 213–236. <https://doi.org/10.1177/2050157913477095>
- Verduyn, P., Lee, D. S., Park, J., Shablack, H., Orvell, A., Bayer, J., Ybarra, O., Jonides, J., & Kross, E. (2015). Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence. *Journal of Experimental Psychology: General*, 144(2), 480–488. <https://doi.org/10.1037/xge0000057>
- Verduyn, P., Ybarra, O., Résibois, M., Jonides, J., & Kross, E. (2017). Do social network sites enhance or undermine subjective well-being? A critical review. *Social Issues and Policy Review*, 11(1), 274–302. <https://doi.org/10.1111/sipr.12033>
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, 3(4), 206–222. <https://doi.org/10.1037/ppm0000047>
- Walther, J. B., Kashian, N., Jang, J. W., & Shin, S. Y. (2016). Overattribution of liking in computer-mediated communication: Partners infer the results of their own influence as their partners' affection. *Communication Research*, 43(3), 372–390. <https://doi.org/10.1177/0093650214565898>
- Wang, X., Gao, L., Yang, J., Zhao, F., & Wang, P. (2020). Parental phubbing and adolescents' depressive symptoms: Self-esteem and perceived social support as moderators. *Journal of Youth and Adolescence*, 49(2), 427–437. <https://doi.org/10.1007/s10964-019-01185-x>
- Wang, X., Xie, X., Wang, Y., Wang, P., & Lei, L. (2017). Partner phubbing and depression among married Chinese adults: The roles of relationship satisfaction and relationship length. *Personality and Individual Differences*, 110, 12–17. <https://doi.org/10.1016/j.paid.2017.01.014>
- Wartella, E., & Reeves, B. (1985). Historical trends in research on children and the media: 1900–1960. *Journal of Communication*, 35(2), 118–133. <https://doi.org/10.1111/j.1460-2466.1985.tb02238.x>
- Wheeler, L., & Miyake, K. (1992). Social comparison in everyday life. *Journal of Personality and Social Psychology*, 62(5), 760–773. <https://doi.org/10.1037/0022-3514.62.5.760>
- Williams, K. D. (2009). Ostracism: A temporal need-threat model. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 41, pp. 275–314). [https://doi.org/10.1016/S0065-2601\(08\)00406-1](https://doi.org/10.1016/S0065-2601(08)00406-1)

- Wills, T. A. (1991). Similarity and self-esteem in downward comparison. In J. Suls & T. A. Wills (Eds.), *Social comparison: Contemporary theory and research* (pp. 51–78). Lawrence Erlbaum Associates.
- Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin*, *106*(2), 231–248. <https://doi.org/10.1037/0033-2909.106.2.231>
- World Health Organization. (2010). *Atlas on substance use (2010): Resources for the prevention and treatment of substance use disorders*. <https://www.who.int/publications/i/item/9789241500616>
- Yang, C. C., Holden, S. M., & Carter, M. D. (2017). Emerging adults' social media self-presentation and identity development at college transition: Mindfulness as a moderator. *Journal of Applied Developmental Psychology*, *52*, 212–221. <https://doi.org/10.1016/j.appdev.2017.08.006>
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, *47*(4), 302–314. <https://doi.org/10.1080/00461520.2012.722805>