

9 Depression and Anxiety in the Context of Digital Media

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Over the past two decades, scientists have strived to understand the relationship between digital media use and two common mental illnesses in adolescents: depression and anxiety. The lifetime prevalence of depression or anxiety among youth increased from 5.4% in 2003, to 8% in 2007, to 8.4% in 2012 (Bitsko et al., 2018). In this chapter we begin by defining depression and anxiety, and addressing the state of the science around the relationship between these two mental illnesses and social media use. We then consider both potential problematic digital media behaviors for depression and anxiety, as well as potential benefits of social media for youth with these conditions. Throughout this chapter we consider other factors that may influence the proposed relationships among digital media use, depression, and anxiety. We conclude the chapter with considerations of clinical implications and future research directions.

Theories of Depression and Anxiety

This chapter will frequently discuss symptoms of major depressive disorder (MDD) and symptoms of generalized anxiety disorder (GAD). We will refer to these as “depression” and “anxiety” for short, but keep in mind that, first, there are many types of depression and anxiety; and second, the research described here is not limited to participants with clinically significant MDD or GAD, but often simply with depressive or anxious symptoms.

The fifth edition of the *Diagnostic and Statistical Manual* (DSM-5) defines a major depressive episode as a period of at least two weeks during which an individual experiences either a depressed mood or a markedly diminished interest in normal activities (American Psychiatric Association, 2013). In adolescents, the depressed mood many manifest as irritability. Also key to the diagnosis of depression is decreased performance or increased distress in a major area of life, such as school, work, or relationships. In contrast, GAD is characterized as a period of at least six months during which a child experiences excessive and uncontrollable worry, worry that is inappropriate

or out of proportion to the anticipated event. In children, this worry is often about competence or performance. Additional symptoms of GAD include restlessness, difficulty concentrating, or sleep disturbance.

There are many theories to explain the development, maintenance, and treatment of depression and anxiety. It will be helpful to have a working theory of depression and anxiety to understand its relationship to digital media use; as such, we will describe two example theories here. However, keep in mind that there are many qualified theories to describe the etiology and maintenance of mental illness – many more than can be discussed in this handbook.

One such theory is cognitive theory. According to cognitive theory, “cognition is at the core of human suffering” (Sommers-Flanagan & Sommers-Flanagan, 2018, p. 273). Factors such as early life events, genetic predisposition, and caregiver modeling lead individuals to develop rigid and negative beliefs about the self, other people, and the world at large. When faced with a life stressor, an individual’s core beliefs are triggered and present as automatic thoughts. Over time, the repeated activation of automatic thoughts results in information processing, emotions, and behaviors that are consistent with depression or anxiety. Core beliefs consistent with depression or anxiety might include “I’m unlovable,” “I’m powerless,” or “I’m defective.” There are many critical events during adolescence – and, relevant to this chapter, events on social media – that might activate thoughts like these. According to cognitive theory, depression and anxiety can be reduced through the conscious revision of automatic thoughts and the core beliefs underlying them. This “validity testing” is often performed in partnership with a therapist or another trusted person.

A second theory through which we will view depression and anxiety, in relation to digital media use, is multicultural theory. This is not so much a theory for the etiology of illness as it is a lens, or an orientation, that all theorists must integrate in order to effectively explain and diagnose illness as well as guide treatment (Bitsko et al., 2018). In short, multicultural theory suggests that mental illness develops in response to the oppressive nature of the dominant culture. According to multicultural theorist Derald Wing Sue, “people of color from the moment of birth are subjected to multiple racial micro-aggressions, from the media, peers, neighbors, friends, teachers and even in the educational process” (Sue et al., 2010, p. 212). It is easy to imagine how symptoms of depression and anxiety might silently develop in response to these social forces. Although multicultural counseling does not emphasize diagnosis (in part because psychopathology has been defined using Westernized notions of normativity) treatment *is* possible. Healing from depression and anxiety, from a multicultural lens, must integrate culturally responsive processes and practices, often in community with culturally competent others.

State of the Science: Social Media, Depression, and Anxiety

Over the past decade, the empirical literature and lay news media have addressed at length associations between social media, depression, and anxiety. The sheer volume of studies in this area has led to a recent upswing in published systematic reviews on this topic. Two such systematic reviews found a small positive association between social media use and these two mental illnesses; however, these reviews noted that the quality and practical significance of these studies are often low, and they are typically not designed to capture the nuance of the effect (Keles et al., 2019; Piteo & Ward, 2020). Another 2016 systematic review analyzed 70 studies looking at the relationship between social media use and depression or anxiety, and found that while passive use of social media was not associated with depression, specific behaviors (e.g., self-comparison) were (Seabrook et al., 2016). In sum, recent systematic reviews indicate that research to date is not designed to piece apart the nuanced relationship between social media use and mental health.

Challenges in Studying Depression and Social Media

The relationship between social media, depression, and anxiety is a challenging area of research for several reasons. As illnesses that wax and wane over time, assessments of depression or anxiety at a single time point may not fully capture the illness experience. A critical approach is to use measurements of mental illness that are shown to be valid measurements of the illness in question, such as the Center for Epidemiologic Studies.

The Depression Scale for Children (CES-DC), the Patient Health Questionnaire-9 (PHQ 9), the Generalized Anxiety Disorder scale – 7 (GAD 7), and the Screen for Child Anxiety Related Emotional Disorders (SCARED) are all empirically supported measures of depression or anxiety in adolescents and young adults (Cannon et al., 2007; Keles et al., 2019; Kroenke et al., 2001; Piteo & Ward, 2020; Richardson et al., 2010; Weissman et al., 1980). Despite the availability of valid and reliable screening tools for depression and anxiety, some studies have not employed such tools and have selected instead ad hoc measurement tools, making the results of these studies difficult to interpret (Twenge & Campbell, 2019).

A second challenge when studying depression and social media is determining a measurement approach for social media use. Most commonly, studies focus on *quantity* of social media use in terms of hours or minutes. Screen time is typically measured using self-reported estimates, which are often inaccurate (Ellis, 2019; Moreno, Jelenchick, et al., 2012). Other studies have employed passive observation to understand screen time, which involves asking a participant to download an application on their phone to track their social media use (Messner et al., 2019). However, these studies tend to capture time on

a specific device, and adolescent technology use is known to incorporate multiple devices. It is recommended that future studies focus on other aspects of adolescents' technology experiences, such as *quality* or *importance* placed on use. These measurement approaches are less common, and present new ways to examine media's relationship to adolescent health.

Third, many studies examining social media use, depression, and anxiety do not focus on normative social media use. There is a wealth of studies measuring problematic social media use or social media "addiction," specifically, as opposed to various qualities of normative use (Duradoni et al., 2020; Hussain et al., 2020). While these constructs are relevant to adolescent mental health, positive associations between *problematic* social media use and mental illness may not apply to *normative* social media use (Przepiorka & Blachnio, 2020). Thus, much of the research on social media use and depression or anxiety among adolescents actually comments on nonnormative use, and the implications for the general population of adolescents cannot be inferred.

Key Hypotheses on the Relationship between Social Media, Depression, and Anxiety

As we consider several key hypotheses in the literature on the relationship between social media screen time, depression, and anxiety, we ask you to keep in mind the measurement and study design issues that may influence these study findings.

The first hypothesis posits that there is a positive linear relationship between social media, depression, and anxiety. That is, as social media use increases, so does risk for anxiety and depression. From a cognitive theoretical perspective, it may be that exposure to certain stimuli on social media (e.g., a photo-shopped image, a photo from a party to which one was not invited, a heartbreaking news story) might activate or reinforce existing negative beliefs about oneself ("I'm worthless") or the world ("everything is out of control"). Further, time spent on social media might *displace* time spent on other behaviors, behaviors that may have resulted in mental health-promoting thoughts (e.g., "I have a knack for piano" or "I'm a good teammate"). The "crowding out" hypothesis explains positive associations between depression and screen time by saying that screen time is related to depression when it occurs at the expense of other beneficial activities (McDool et al., 2020; Twenge, Joiner, Martin, & Rogers, 2018). As discussed, multiple systematic reviews support a weak positive relationship between social media use and adolescent depression or anxiety. However, because the studies reviewed are often cross-sectional, it is difficult to ascertain whether social media use causes depression or anxiety, or whether the presence of anxiety or depression makes one more prone to use social media (and less prone, for example, to activities such as exercise, in-person socialization, vocational pursuits, or recreation).

Certain studies have detected greater risk for anxiety and depression after a certain threshold of social media use is met, which has been cited as three hours per day (Riehm et al., 2019), four hours per day (Barman et al., 2018), and nearly five hours per day (O’Keeffe et al., 2011).

A second hypothesis states that a U-shaped curve best captures the relationship between internalizing symptoms and social media use, with negative mental health associated with very low or very high use. There is some empirical support for this hypothesis (Belanger et al., 2011; Liu et al., 2016; Moreno, Jelenchick, et al., 2012). From a multicultural perspective on anxiety or depression, adolescents with nonnormative (very high or very low) use may be in other ways alienated from the dominant culture. High social media use might indicate a lack of participation in other areas of life, while very low social media involvement might signify estrangement from what now constitutes a developmentally appropriate activity: social media. Further, youth at the very high and very low ends of social media may be socioeconomically disadvantaged; they may live in low-resource settings, without consistent access to the Internet, or in contexts where social media use is the only activity available. Financial hardship, or disempowerment, is associated with depression and anxiety (Selfhout et al., 2009). Further, the U-shaped curve may also result from the stimuli encountered on social media. Frequent social media use puts minority youth at risk of daily, and sometimes hourly, evidence of minority oppression in the form of news media. Similarly, those who choose to stay off of social media may be trying to avoid these stimuli. Importantly, detecting the U-shaped curve requires the use of analytic approaches beyond traditional linear regression. Therefore, it is possible that studies presumed to support a linear positive relationship actually support the U-shaped curve hypothesis.

A third hypothesis is that there is no relationship between social media and depression, or social media and anxiety. More specifically, this hypothesis suggests that there is no *population-level clinically significant* relationship between these illnesses and social media use. Rather, certain subgroups may be at elevated risk for depression and anxiety due to social media use (Radovic et al., 2017) while for others there is no relationship, and for still others social media use actually *promotes* mental health. At a population level, this variability cannot be detected. From a multicultural perspective, this makes sense; one would never expect to find a “population level” effect of social media on depression or anxiety, in a world where oppression (and consequential mental illness) is not equally distributed. A white, cisgender child from a middle-class household is likely to see aspects of their own life reflected online; in contrast, those with any number of minority identities may feel “othered” by going online. The “no relationship” hypothesis is supported by several studies that have identified no population-level statistically significant association between social media use and depression or emotional problems (Anjum et al., 2019; Fardouly et al., 2018; Ferguson, 2021; Jelenchick

et al., 2013). Given the additional difficulty of publishing statistically insignificant findings, it may be that more studies have detected the “null” relationship than have been published.

The fourth and final hypothesis is “it’s complicated,” which mirrors a common relationship status adolescents themselves like to use. The majority of studies focus on screen time as a measure of social media use, and it may be that other aspects of social media use relate more to depression and anxiety than does screen time. This hypothesis finds theoretical support from a cognitive perspective of anxiety and depression. Different online behaviors generate different thoughts, thoughts that may either reinforce or challenge beliefs about the self. Cognitive theory further states that *avoidance* is a key behavior maintaining illnesses like anxiety and depression. If an adolescent scrolls through social media primarily as a means of avoiding – rather than confronting – dreaded stimuli, social media use would likely contribute to the maintenance of anxiety. In contrast, a youth who uses their Finsta (Fake Instagram) to air the “less acceptable” sides of themselves may learn over time, through this online “validity testing,” that what they thought were unacceptable features are warmly received by peers. Last, children who already have depression or anxiety might assign social media different worth; they may compulsively check social media for evidence in support of their own worth, while a child who affords social media no such power would not feel this attachment toward use.

Few studies have been designed to test Hypothesis 4; that is, few assess the specific features or intentions underlying adolescents’ social media use. As such, it remains to be seen how the specific uses of social media differentially relate to depression and anxiety. A recently developed tool to measure the quality of use, the Adolescents’ Digital Technology Interactions and Importance scale, is a promising means of evaluating the importance that adolescents assign to different affordances of technology, including technology to bridge online/offline experiences and preferences, technology to go outside one’s identity or offline environment, and technology for social connection (Moreno et al., 2020). Tools like these are needed to understand the nuanced relationship between social media use on depression and anxiety in adolescents.

Where Are We Now?

A 2020 paper synthesized data from systematic reviews and meta-analyses between 2014 and 2019. This included cohort, longitudinal, and ecological momentary assessment studies (Odgers & Jensen, 2020). They authors concluded that most research has been correlational, focused on adults, and has led to a mix of conflicting results. They also observed that most studies report “small associations . . . that do not offer a way of distinguishing cause from effect and, as estimated, are unlikely to be of clinical or practical significance” (p. 336). It has become increasingly evident that the current literature may not

support Hypothesis 1, but that Hypotheses 2–4 above remain available for more nuanced and high-quality studies to address.

Potentially Problematic Digital Media Behaviors for Depression and Anxiety

As discussed, the relationship between screen time and depression and anxiety in adolescents is not straightforward. Thus, rather than focusing on time spent on social media, an alternative approach is to focus on specific digital behaviors and their relationships to depression and anxiety. Problematic or addictive social media use is discussed elsewhere in this handbook. The present chapter will discuss problematic aspects of *normative* use that are associated with depression and anxiety among adolescents. As a reminder, depression is often characterized by symptoms such as low mood, fatigue, diminished pleasure in activities, and thoughts of death, while anxiety is characterized by symptoms like excessive worry, sleep disturbance, and restlessness. In this section, we will examine how symptoms of depression and anxiety are related to specific adverse experiences on social media, including exposure to cyberbullying, troubling news media, and certain types of highly visual social media. Next, we will consider other variables that strengthen the observed relationships between social media use, depression, and anxiety, including fear of missing out, sleep, and gender.

Risk 1: Adverse Online Experiences

Cyberbullying

The majority of teens have experienced an instance of cyber-victimization at some point. The most common categories of cyber-victimization include name-calling, spreading of rumors, and receiving explicit or unwanted images. However, cyberbullying is less common – and often more serious (Anderson, 2018). Cyberbullying has occurred when cyber-victimization is repeated, intentional, and unwanted (Ansary, 2020). Unsurprisingly, experiencing cyberbullying is linked to depression and anxiety (Alhajji et al., 2019; Barry et al., 2019; Tian et al., 2018; Willenberg et al., 2020). Indeed, a previous study found that online harassment was key to explaining the observed relationship between social media use and depressive symptoms (Kelly et al., 2018). From a cognitive theoretical perspective, experiences of cyber-victimization may cause or reinforce core beliefs associated with depression and anxiety (e.g., “I am unlovable,” “I am powerless”).

It is also important to adopt a multicultural perspective when understanding the relationship between cyberbullying and depression or anxiety. Adolescents of color frequently experience online racism, including online

micro-aggressions, discrimination, and hate crimes (Moreno et al., 2016). Some research suggests, however, that racial minority adolescents are actually *less* likely to report cyberbullying (Alhajji et al., 2019; Edwards et al., 2016). It is unclear whether this finding is due to a real difference in the prevalence of cyberbullying; increased stigma in certain racial or ethnic groups around *reporting* cyberbullying; or because racism is so common to minority adolescents' online experience that they do not recognize it as cyberbullying. Just as offline experiences of racism and bullying are linked to symptoms of depression and anxiety, so these symptoms can emerge from the same interactions online (Cannon et al., 2007).

Adolescent females and members of sexual minority groups are also more at risk of upsetting experiences online (Kroenke et al., 2001; Richardson et al., 2010). Research suggests females are more likely to report cyberbullying and are more negatively affected by it (Alhajji et al., 2019; Rice et al., 2015). Adolescent females are also more likely to be victims of digital intimate partner violence (Burns et al., 2016). In combination with poor sleep, experiences of cyberbullying have been shown to fully explain the relationship between high social media use and psychological distress among females (Kelly et al., 2018).

News Media

Research shows that 77% of adolescents obtain their news through social media (Robb, 2020). The news is frequently troubling and, as such, exposure to it, via social media, may elevate symptoms of anxiety and depression for certain adolescents. This may be especially true for members of stigmatized or disenfranchised groups, as well as people with existing depressive or anxiety symptoms (Caporino et al., 2020; Sahoo et al., 2020; Weinstein, 2018). In the year 2020, for example, adolescents in the United States could not open their most-used social media apps without confronting news of a global pandemic, racial injustice, wildfires across California and Oregon, and a highly contentious election. Black and Hispanic or Latino teens describe finding the news to be more important, and feeling more affected by the news, than their white counterparts (Mundt et al., 2018). Adolescents living in the United States who identify as black, transgender, or undocumented risk facing news of injustice against themselves or others with their same identities nearly every time they log into social media (Campbell & Valera, 2020; Ince et al., 2017; Leopold & Bell, 2017; Robb, 2020). While social media is a platform on which many people can and do effectively advocate for social justice and raise awareness about social injustice, both cognitive and multicultural theories help to explain why encounters with news on social media might perpetuate depression and anxiety. The news can reinforce negative beliefs about the world (*it's dangerous*), oneself (*I'm powerless*), and one's future (*people like me don't make it very far*).

Risk 2: Highly Visual Social Media

Exposure to certain highly visual social media (HVSM) is a risk factor for depression and anxiety in some adolescents. Undoubtedly, visual social media can be positive. However, in this section, we use HVSM as shorthand for *risky* HVSM – for example, media that enables users to modify or “improve” their appearance before uploading (Weissman et al., 1980). Many of the most popular social media platforms for adolescents (Instagram, Snapchat, and most recently TikTok) are visual platforms that allow for appearance modification (Anderson & Jiang, 2018). While use of HVSM has also been associated with disordered eating, the relationship between social media and disordered eating is covered elsewhere in this handbook. The present section will explore the relationship between HVSM and depression and anxiety.

Some of the thoughts and feelings that characterize depression and anxiety may be triggered by exposure to HVSM. Feelings of worthlessness or fears of inadequacy may be sparked or exacerbated by frequent exposure to visually “perfected” images.

Youth may compare themselves to the people they “follow,” and find themselves lacking (Marengo et al., 2018). From a multicultural perspective, visual media are uniquely able to transmit messages from the dominant culture: how to look, how to behave, and the types of people and behaviors that are deserving of praise.

People with existing tendencies toward poor body image are at particular risk of depression or anxiety as a result of exposure to HVSM (Kelly et al., 2018; Marengo et al., 2018). The tendency to be bothered if tagged in an unflattering picture is associated with depression among college students (Robinson et al., 2019). HVSM also allows for taking, editing, and uploading pictures of oneself online, which has been linked to anxiety in college students (Mills et al., 2018; Wick & Keel, 2020). Appearance-related social comparisons, which are uniquely afforded by HVSM, have been associated with depression (Choukas-Bradley et al., 2020; Hawes et al., 2020). Engaging with “pro-ana” (pro-anorexia) media or “thinspiration,” which often contains depictions of thinness, “clean” foods, and calorie-deficient diets, has been linked with depression and anxiety (Fitzsimmons-Craft et al., 2020; Jennings et al., 2020). From a cognitive perspective, social media may reinforce the negative belief that one’s worth is tied to bodily appearance. If viewers perceive themselves as failing to meet these standards, depressive or anxious symptoms may increase. It may also be that adolescents who are anxious or depressed *and* dissatisfied with their bodies are more likely to engage with HVSM in pursuit of information (a like, comment, or share) challenges or confirms of their self-beliefs.

However, despite the theoretical justification and some empirical support, a recent scoping review on HVSM and depression found that the relationship

between HVSM and depression is inconclusive (McCrary et al., 2020). It may be that the relationships between HVSM and depression are simply better explained by other variables. The absence of an effect may also be due in part to a lack of research studies designed to detect this effect: research on social media use does not always distinguish between HVSM and other social media, let alone differentiate between *positive* and *negative* forms of visual social media. Further, research typically relies on quantitative methods to evaluate the relationship between HVSM and depression and anxiety, which lacks richness and possibility for participants to elaborate on their experiences.

The relationship between social media use and depression or anxiety also may be dependent on a variety of factors that increase risk for internalizing symptoms. Several of these potential moderators are discussed below.

Fear of Missing Out

Fear of missing out, or FOMO, is defined as the “pervasive apprehension that others might be having rewarding experiences from which one is absent” (Przybylski et al., 2013, p. 1841). FOMO in adolescents has been independently associated with both depression and anxiety and, less consistently, with social media use (Barry et al., 2017; Franchina et al., 2018; Przybylski et al., 2013). Given that social media is a place where the (often enviable) experiences of others are constantly on display, it is not difficult to explain the link between social media use and FOMO. More complex is to explain why adolescents who are higher in FOMO are more at risk for depression or anxiety as a consequence of social media use (Fabris et al., 2020). It may be that, for adolescents with tendencies toward FOMO, exposure to friends’ and influencers’ “highlight reels” creates feelings of worthlessness, worry, and dissatisfaction with one’s own daily life. From a cognitive perspective, scrolling through social media might trigger automatic thoughts, such as “no one invites me to anything” or “my life sucks in comparison with hers.” The action of scrolling through social media may also be motivated by FOMO, as depressed or anxious adolescents search for evidence to assuage or confirm the belief that they are missing out.

At present, research is mixed on whether FOMO affects the relationship between social media use and depression or anxiety in adolescents. While there is ample evidence that FOMO is associated with *problematic* social media use and problematic smartphone use (Franchina et al., 2018; Przepiorka & Blachnio, 2020), there is insufficient evidence that FOMO explains or strengthens the relationship between typical use and depression or anxiety at a population level. In some cases, this absence of an effect may be due to insufficient measures of social media; as discussed, insufficient measures focus solely on time spent, rather than activities performed or experiences had while online.

Sleep

Sleep is critical to consider in any study of social media and mental illness. Indeed, sleep is perhaps the most consistently supported variable to explain the relationship between social media use and depression or anxiety (Alonzo et al., 2019; Kelly et al., 2018; Lemola et al., 2015; Oshima et al., 2012). However, studies suggesting that sleep explains the relationship between social media use and depression and anxiety have been largely cross-sectional, meaning directionality is subject to interpretation. Before exploring these hypotheses, it is important to note that poor sleep (e.g., sleeping too much or too little, trouble falling asleep) is actually a *symptom* of both depression and anxiety. Thus, sleep trouble is central to the experience of depression and anxiety for many people.

One hypothesis suggests that social media use *causes* sleeplessness, which in turn causes or exacerbates symptoms of depression or anxiety. Social media may cause sleeplessness by displacing sleeping hours and delaying bedtime (Quante et al., 2019). The blue light exposure associated with social media use may disrupt melatonin and cause wakefulness (Blass et al., 2006; Levenson, 2016; Wahnschaffe et al., 2013). It may be that social media is uniquely stimulating as compared to nonsocial online activities, given that it contains a wealth of self-relevant social information and capacity for social interaction.

A second hypothesis interprets the association in the reverse direction. That is, it may be that adolescents who are already depressed or anxious are more prone to sleep disruption. In turn, disrupted sleep leads to social media use, perhaps as adolescents seek distraction or support online. However, this hypothesis is contentious. Some research has shown that the relationship between poor sleep and social media use cannot be explained by existing depression or anxiety (Twenge & Campbell, 2019; Woods & Scott, 2016). Thus, *all* teens – not just those who are anxious or depressed – may benefit from finding soothing activities that are less stimulating than social media, and from following the American Academy of Pediatrics' recommendations to keep devices out of bedrooms at nighttime (Moreno et al., 2016).

Gender

Some studies have suggested that gender may influence the effect of social media use on depression and anxiety. Several individual studies have found that adolescent females are more likely than males to experience depression associated with social media use (Barthorpe et al., 2020; Kelly et al., 2018; Twenge, Joiner, Rogers, & Martin, 2018; Twenge & Martin, 2020; Waterloo et al., 2018). From a multicultural theoretical perspective, the potentially unique negative effects of social media for adolescent females finds support. The design of social media (including affordances for appearance feedback and negative self-comparison) may be uniquely oppressive to adolescent

females, particularly females of color, who face great pressure from the dominant culture to conform to a certain beauty ideal (Coyne et al., 2019; Messner et al., 2019). Under multicultural theory, symptoms of anxiety and depression (e.g., guilt, worry, restlessness, diminished pleasure) should not be understood as reflecting psychopathology, but instead reflecting reasonable reactions to the dominant culture.

However, summaries of research found in recent systematic reviews conclude no consistent effect of gender on the relationship between social media use and internalizing symptoms, and typically conclude that more research is needed on this topic (Keles et al., 2019; Piteo & Ward, 2020). A meta-analysis evaluated 67 independent samples of a combined 19,652 participants, and found that the effect of gender on the relationship between time spent on social media and psychological well-being was insignificant (Huang, 2017). A recent review of reviews reported something slightly different: after controlling for confounding variables, the least-depressed adolescent females in the sample had “slightly increased risk for depressive symptoms with daily social media use” (Odgers & Jensen, 2020, p. 341).

While the moderating effect of gender is inconclusive, research supports that males and females do use social media differently (Boyle et al., 2016). Research suggests that females spend more time online and are more likely to say they are nearly constant online users compared to adolescent males (50% vs. 39%) (Anderson & Jiang, 2018; Duggan, 2013). Females are more likely than males to use social media for self-expression, including expression of joy and pride, as well as expression of negative emotions, such as worry, stress, and depression (Egan & Moreno, 2011; Moreno, Christakis, et al., 2012; Waterloo et al., 2018). Given that females compared to males are likely to use online platforms for emotional expression, it is also possible that females with depression turn to social media more readily for support. Thus, it may be that social media use does not predict depressive symptoms, but greater depressive symptoms predict more frequent social media use, especially among females (Heffer et al., 2019).

Potentially Beneficial Digital Media Behaviors for Depression and Anxiety

Certain uses of social media may promote mental health among adolescents. As previously mentioned, cognitive theory would suggest that online experiences that confirm positive beliefs about the self, and those that challenge or invalidate negative beliefs, are likely to reduce depression or anxiety. From a multicultural perspective, uses of social media that create identity-affirming alternatives to offline spaces may mitigate depression and anxiety. However, the hypothesis that social media use directly reduces anxiety or depression is difficult to test. Similar to studies that try to assess

whether social media use directly increases depression or anxiety, there are methodologic barriers to these assessments. That being said, empirical research does support a positive association between social media use and adolescents' mental health. This is especially true for adolescents with depression and anxiety, adolescents with unique and marginalized identities, as well as typical adolescents who seek to maintain or promote mental wellness online.

Benefits of Social Media for the Typical Adolescent

Typical adolescents report using social media in ways that may ward off depressive and anxious symptoms, both by seeking information related to these symptoms and by finding support and connection online (Rideout et al., 2018). Research has shown that adolescents often feel happy, amused, or closer to friends while using social media (Weinstein, 2018; Wenninger et al., 2019). While studies over the years have repeatedly demonstrated social networks and support contribute to overall and mental health, too much online social networking may put one at risk for negative experiences, cognitions, and emotions (Ahn, 2012; Longobardi et al., 2020; Negriff, 2019; Rajani et al., 2011). Those who experience isolation, stress, and unmet needs in their offline worlds may find corrective experiences or buffering effects by going online (Nick et al., 2018; Prochnow et al., 2020). One qualitative interview study found that young people naturally and organically developed close-knit communities of close friends, often in the form of private Instagram accounts, on which privacy was a priority and emotional disclosure was safe and commonplace (Gibson & Trnka, 2020). These findings support the positive, adaptive, and strategic use of social media for typical adolescents.

Benefits of Social Media for Adolescents with Depression and Anxiety

Adolescents with depression and anxiety use social media differently than their mentally well peers (Radovic et al., 2017). Thus, the commonly cited associations between social media use, depression, and anxiety may be explained in part by the unique offerings of social media for depressed and anxious youth. Youth have described feeling motivated to share their depression online because it is perceived as easier than sharing in-person, and because they are hoping to connect with others who understand and have had similar experiences (Carey et al., 2018; Rideout et al., 2018). A systematic narrative review of 28 studies on online help-seeking among adolescents found that adolescents commonly cited anonymity, ease of access, and sense of community as driving motivators to find mental health support online (Pretorius et al., 2019). Thus, youth who are already experiencing depression and anxiety may find particular mental health benefits by going online.

Benefits of Social Media for Marginalized Adolescents

Social media may be particularly beneficial to marginalized adolescents, for whom it may not be safe, feasible, or appealing to find support in the offline world. This may include homeless youth, as well as racial, sexual, and gender minority youth. From a multicultural perspective, the possibility of finding support for mental illness while remaining anonymous may help adolescents to overcome shame and stigma, imposed by the dominant culture, around help-seeking. Further, in the wide world of online support, adolescents may be more likely to find support that is tailored to their cultural values and worldview.

A scoping review of 19 studies on individuals experiencing homelessness and their social media use found that for homeless youth, seeking help online minimized barriers and prejudices often encountered in-person (Calvo & Carbonell, 2019). Perhaps for the same reason, sexual and gender minority youth are significantly more likely than straight and cisgender youth to go online for information about depression and anxiety (Marengo et al., 2018; Rideout et al., 2018). Transgender youth have affirmed that social media is a place to garner emotional, informational, and “appraisal” support, or the validation in seeing their same experience reflected in others (Selkie et al., 2020). In sum, both qualitative and quantitative research studies support that homeless youth, as well as sexual and gender minority youth, use social media to find affirming communities and avoid discrimination (Craig et al., 2015; Escobar-Viera et al., 2020; Jenzen, 2017).

Another area of study has focused on experiences of racial minority youth. Perhaps due to a lack of culturally competent healthcare providers offline, black youth are more likely to go online to share their health stories (Rideout et al., 2018). One study interviewed 25 racially and economically diverse undergraduate students to understand the empowering and disempowering aspects of social media (Brough et al., 2020). Interviewees noted that social media allowed them to find and connect with similar others (e.g., by using the #blackLGBTQ hashtag), as well as to represent their voice both by sharing their own stories and observing as others share theirs. However, the same youth noted that social media can have the opposite effect, encouraging conformity to the dominant culture and exposing them to lifestyles that were not relatable (Brough et al., 2020). Thus, while social media may have unique affordances for marginalized youth, its potential to “other” its end users could also worsen mental health symptoms.

With the exception of the studies mentioned above, there is less support for the differential use of social media by racial or ethnic minorities. None of the recent systematic reviews on the relationship between social media use and internalizing symptoms mention race, although two call for more diverse samples (Odgers & Jensen, 2020; Orben, 2020). This suggests that there is little conclusive evidence on the differential use of social media by race, as well

as any differences in associated mental health outcomes, whether positive or negative. Given that certain racial and ethnic groups may have fewer opportunities for culturally competent in-person mental health care and support, it is important to understand how they have built alternative spaces online.

Future Research Directions

After describing the literature to date, including studies that examine the relationships between depression and social media, problematic behaviors and experiences on social media, variables that may affect the relationship between social media and mental health, as well as the ways in which social media may alleviate symptoms of depression and anxiety, it is time to consider future research directions. The content above has noted gaps in the current understanding of these topics and exciting opportunities for future research in this area.

From the evidence surrounding depression and social media, we conclude with four critical considerations to move the research forward. These include improved assessments, advanced and nuanced analysis approaches, interpreting results with regard to their practical significance, and improving transparency in linking findings to conclusions. Further, we recommend that future studies incorporate measurements and hypotheses to address potential positive and negative associations between social media use, depression, and anxiety.

First, for improved assessments, many studies of depression do not use validated measurements for depression, leading to findings with limited clinical implications. Further, assessing technology use has most often focused on self-reported quantity of use, leading to biased and inaccurate assessments. Knowing that the vast majority of youth carry smartphones in their pockets, and often use devices passively (for example, walking while listening to music) and other devices simultaneously (for example, performing schoolwork on one's laptop while using a smartphone as a calculator), accurately reporting the time spent on technology is next to impossible and not always meaningful. Improving technology assessments may involve further considerations of quality of use, such as through understanding emotional investment in use, importance placed on use, and the extent to which device use displaces other activities. Further, because offline activities are limited (either due to availability of resources or, the reality of offline discrimination, or recently, by the global COVID-19 pandemic), technology use may not be a marker of risk so much as a necessary path for education, entertainment, support, and connection.

Second, for advanced and nuanced analytic approaches, many previous studies have used population-level analyses such as linear or logistic regression across single populations. Future studies should consider more nuanced

analysis approaches, such as quadratic analysis or latent class analysis to identify differences within groups. This approach would allow for detection and appreciation of individual differences that shape interactions with technology (Orben, 2020).

Understanding of practical significance, represented by statistical effect sizes, is also important, as many studies of media identify small effect sizes that are unlikely to drive clinical illness states. Putting these results into context is critical to help readers understand what behaviors are necessary to modify, and what behaviors lose practical significance in the context of an adolescent's whole health.

Finally, we recommend that researchers evaluating social media, depression, and anxiety consider hypotheses that incorporate the potential for both positive and negative health effects, especially within at-risk subgroups. One study using this approach found that 46% of adolescent participants indicated that social media had a positive effect on their mood, while 41% reported neither a positive nor negative effect, and only 6% reported a negative effect (Wright et al., 2020). Measuring diverse uses and motivations for use, alongside validated measures of depression and anxiety, would allow for fuller consideration of social media's effects on a study population, subgroup or individual. Specifically, the social media use among racial minority youth is underexplored. Thus, research should aim to understand the effects of social media on mental health within subgroups and individuals, especially individuals who are frequent targets of discrimination.

Clinical and Intervention Resources

Resources to promote healthy social media use may benefit both clinicians working with adolescents, and interventionists seeking new approaches to test.

There are several key tools and concepts that can be considered toward these goals:

1. The American Academy of Pediatrics policy statement, "Media Use among School-aged Children and Adolescents," recommended that parents establish media use rules to promote safe and healthy media use (Moreno et al., 2016). The policy statement proposed that families create a Family Media Use Plan to select and engage with media use rules. This plan is available online and includes a Media Use Plan in which families can select family rules and expectations around media use. It also includes a Media Time Calculator that allows teens to plan and consider how they spend their time during a given day, including time for media use.
2. Healthy Internet Use Model. The Healthy Internet Use Model focuses on three key concepts: balance, boundaries, and communication (Moreno, 2013).

- **Balance:** The balance between online and offline time is a critical concept to discuss with youth. Spending time offline, including hanging out with friends, exercising, or spending time outside, is critical to adolescent development. Further, achieving balance provides protection against concerns such as problematic technology use.
- **Boundaries:** Boundaries refers to setting limits around what youth are willing to display about themselves online or on social media, as well as setting limits in where adolescents spend their time online. Discussing guidelines on what types of personal information are not appropriate to post on social media sites with teens can help prevent them from several online safety risks. These risks include being targets of bullying, unwanted solicitation, or embarrassment.
- **Communication:** Just as with many tenets of adolescent health, parents should discuss social media and technology with their adolescents early and often. Establishing home rules for social media and technology use as soon as the child begins using these tools is an important way to promote healthy technology use from the beginning.

Further, adolescents should be advised that social media can promote mental health but can also make it worse. Social media can negatively affect health when it displaces other health-promoting activities, like sleep and physical activity. However, social media use that falls within normative ranges should not be the focus of modification. Rather, adolescent patients should be encouraged to pursue those aspects of social media use that research suggests promote mental health, while reducing or eliminating social media use associated with depression and anxiety.

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