University of Messina

ISSN 2612-4033

Journal of Clinical & Developmental Psychology

Journal homepage: http://cab.unime.it/journals/index.php/JCDP/index

Adolescent Mental Health in the Digital Era: Social Media, Screen Time, and Digital Literacy

Sechi M.[1]*, Saladino V.[2], Calaresi D.[2], Giordano F.[3], Verrastro V.[2]

[1]Department of Humanistic Research and Innovation, University of Bari Aldo Moro, Italy
[2]Department of Health Sciences, Magna Græcia University of Catanzaro, Catanzaro, Italy
[3]Department of Human, Social and Health Sciences, University of Cassino and Southern Lazio, Cassino, Italy

ABSTRACT

Background: The increasing exposure of adolescents to digital technologies has raised significant concerns regarding its psychological implications. This narrative review examines the impact of social media use on adolescent mental health, the psychological consequences of excessive screen time, and the role of digital literacy in promoting online safety.
Methods: A narrative review was carried out, integrating quantitative and qualitative research on social media use, screen time, and digital literacy. The analysis emphasized key themes identified in studies from the past two decades, with adolescents serving as the primary participants.
Results: Prolonged use of social media has been linked to anxiety, depression, and low self-esteem, primarily due to mechanisms of social comparison and the pursuit of approval. Moreover, excessive screen time is associated with social isolation and a decline in social skills, as digital interactions replace face-to-face contact. The concept of digital literacy emerges as a crucial preventive approach, equipping adolescents with the skills to engage with technology responsibly and mitigate psychological risks.
Conclusions: Overall, these findings emphasize the importance of balanced technology use and targeted interventions, such as fostering digital literacy, to address the psychological challenges posed by the pervasive use of digital technologies among adolescents.

Keywords: Social Media; Screen Time; Digital Literacy; Adolescence; Mental Health

* *Corresponding author* Marta Sechi, Department of Humanistic Research and Innovation, University of Bari Aldo Moro Piazza Umberto I, 70121 Puglia, Italy

E-mail address: m.sechi1@phd.uniba.it

https://doi.org/10.13129/2612-4033/0110-4799

Introduction

In recent years, social media use (SMU) has expanded at an unprecedented rate, profoundly transforming the way adolescents communicate, interact, and construct their identities. Platforms such as Instagram, TikTok, Facebook, and Snapchat have redefined social interactions, offering unique opportunities for self-expression, peer connection, and information exchange (McCrae et al., 2017; Marino et al., 2018). However, concerns have emerged regarding the potential psychological implications of excessive or problematic engagement with these digital platforms, particularly in relation to adolescent mental health (Vogel et al., 2014; Appel et al., 2016). This narrative review aims to contribute to a growing but fragmented body of literature by examining some areas that appear to be less thoroughly explored in previous studies—specifically, the different ways individuals engage with social media (e.g., content creation versus passive consumption), gender-related patterns, and the potential role of digital literacy as a protective factor. In this context, adolescence emerges as a critical developmental phase characterized by heightened emotional sensitivity, an increased need for social validation, and a growing reliance on peer relationships (Festinger, 1954). Within this context, the way adolescents engage with social media can have significant consequences for their psychological well-being. Research has linked Problematic Social Media Use (PSMU) to symptoms of anxiety, depression, and low self-esteem, with mechanisms such as social comparison playing a key role (Jiang, 2023; Przybylski et al., 2013). The exposure to idealized online representations can amplify feelings of inadequacy and body dissatisfaction, increasing psychological distress among young users (Schønning et al., 2020). Another important psychological construct in the digital age is **Fear of Missing Out (FOMO),** the persistent anxiety of being excluded from socially rewarding experiences. This feeling is reinforced by the constant flow of updates and notifications on social media, contributing to increased psychological vulnerability among adolescents (Talukdar, 2024; Meherali et al., 2021; Bulat, 2024). In addition to its psychological effects, SMU significantly impacts cognitive functioning and sleep patterns: prolonged screen exposure, particularly during evening hours, disrupts melatonin production, leading to reduced sleep quality and increased risk of insomnia (Cain & Gradisar, 2010; Twenge, 2019). Sleep deprivation has further been linked to mood disturbances, diminished attentional capacity, and impaired academic performance (Domingues-Montanari, 2017). Additionally, research suggests that excessive SMU may affect the Default Mode Network (DMN), a brain network involved in self-reflection, emotional regulation, and identity formation (Zadbood et al., 2017). Despite these

concerns, social media platforms can also have positive effects. Some studies indicate that they provide emotional support and a sense of belonging, particularly for adolescents who struggle with offline interactions (Deters & Mehl, 2013). The impact of social media largely depends on how it is used: active engagement—such as content creation and direct communication—is linked to more positive outcomes, while passive consumption is associated with increased social comparison and reduced well-being (Verduyn et al., 2017). A key protective factor in navigating social media risks is digital literacy. Adolescents with strong digital literacy skills are better equipped to critically assess online content, recognize unrealistic portrayals, and develop healthier online habits (Bin Naeem & Boulos, 2021). Furthermore, promoting responsible SMU can contribute to the prevention of cyberbullying, misinformation, and problematic usage patterns (Turner et al., 2017). Given these considerations, this study aims to provide an in-depth analysis of the relationship between SMU and adolescent mental health, identifying both risk and protective factors. Specifically, we seek to explore how different patterns of social media engagement—ranging from active versus passive use to the role of digital literacy—moderate the psychological impact of these platforms. By critically evaluating existing evidence, this research intends to contribute to the development of more effective prevention and intervention strategies. Our central hypothesis is that the effects of social media on adolescent well-being are not solely determined by the amount of time spent online but rather by how these platforms are used and the level of digital awareness adolescents possess.

Methods

This narrative review was conducted through a comprehensive search of peer-reviewed literature in academic databases, including PubMed, APA PsycNet, and ScienceDirect. The literature search was conducted between January and March 2025. Studies were identified using a combination of relevant keywords (e.g., 'social media use,' 'screen time,' 'digital literacy,' 'adolescent mental health,' 'psychological well-being') and search filters. Specifically, the following search string was used: ("social media" OR "screen time" OR "digital literacy") AND ("mental health" OR "psychological well-being") AND ("adolescents" OR "teenagers"). The inclusion criteria were: (1) articles published in English, (2) full-text availability, (3) studies published in the last 20 years, and (4) research focusing on adolescent populations (ages 10–19). Empirical research (both qualitative and quantitative) and systematic reviews were included, while studies focusing on adult populations or non-psychological aspects of

technology use were excluded. The thematic analysis approach was employed to analyze the selected studies, with the aim of discerning key trends and psychological impacts. Duplicate records were identified and subsequently removed. The screening process involved an initial assessment of titles and abstracts, followed by a full-text review of potentially pertinent articles. Methodological quality was evaluated qualitatively, focusing on the clarity of study aims, the thoroughness of sample descriptions, and the validity of outcome measures.

Results

The Psychological Impact of Social Media on Adolescents

The increasing SMU and its impact on psychological well-being is a key area of research, with a particular focus on its effects on adolescents. In fact, this developmental stage is characterized by increased emotional reactivity and social sensitivity that make young people particularly vulnerable to the negative effects of social media (Brenhouse & Andersen, 2011). The parallel increase in the use of digital platforms and mental health issues has made the study of this phenomenon a priority. Although some online behaviors have been described in psychiatric terms, such as “addiction,” it is essential to contextualize them: for example, the tendency of young people to frequently post images of themselves (“selfie”) may appear narcissistic, but it represents a social norm in youth digital contexts (Kim, 2017). Nonetheless, there is consensus that the ways in which adolescents use social media can impair personal and social development (Twenge, 2006). Social media can, in this sense, be considered a “double-edged sword”: on the one hand, they allow for the expression of thoughts and emotions, as well as provide social support (Deters & Mehl, 2013), on the other hand, studies have shown a link between their use and psychological problems. A systematic review of 11 studies revealed a statistically significant correlation between SMU and depressive symptoms in children and adolescents (McCrae et al., 2017). A meta-analysis of 23 studies confirmed the association between problematic Facebook use and psychological distress in adolescents and young adults (Marino et al., 2018). In addition, other systematic reviews have found a significant relationship between SMU and depression (Best et al., 2014). Recent research by Sala et al. (2024) reinforces this evidence, showing a strong correlation between prolonged engagement on social media and increased levels of anxiety, depression, and low self-esteem. Several studies, as indicated above, point out that the link between social media and psychological distress may be bidirectional, with adolescents already vulnerable to depression tending to

spend more time online rather than social media being the primary cause (Keles et al., 2019). In addition, the methodological quality of much research in the field has been questioned, with much research based on self-reported data and cross-sectional studies failing to determine clear causal links (Przybylski & Weinstein, 2019). A recent meta-analysis conducted by Ahmed and colleagues (2024) confirmed that PSMU is associated with higher levels of depression and anxiety than SMU. Specifically, the systematic review included 182 studies with a total sample size of 1,169,396 individuals and found that the associations between SMU and depressive symptoms were more pronounced in young people under the age of 18 and in women, suggesting greater vulnerability related to social comparison and body image concerns. The above review also identified a significant association between PSMU and sleep disorders, confirming that problematic use of digital platforms contributes to insomnia and poor sleep quality. Sleep deprivation would thus have negative effects on mental health, exacerbating symptoms of anxiety and depression. Finally, recent research in cognitive neuroscience suggests that prolonged use of social media may interfere with the development of the Default Mode Network (DMN), a brain network involved in self-regulation, inner reflection, and the construction of a coherent personal narrative (Zadbood et al., 2017). The DMN integrates internal information, such as past experiences and beliefs, with external stimuli, contributing to identity construction and the ability to process events over time. Continuous exposure to highly stimulating and fragmented content, typical of social platforms, could inhibit DMN activity, reducing time devoted to autonomous reflection and autobiographical memory. This alteration could contribute to adolescents' difficulty in managing complex emotions, increasing their vulnerability to anxiety states and depressive symptoms. In any case, there are also other studies that have suggested that not all types of SMU have the same impact: active use (interaction, content creation) has been associated with more positive effects than passive use (scrolling without interaction), which may increase social comparison and reduce psychological well-being (Verduyn et al., 2017). Thus, it is inferred that the individual nature of SMU suggests that some users may benefit from online interactions while others are negatively affected (Frison & Eggermont, 2017; Schønning et al., 2020). In any case, the cognitive impact of prolonged SMU is a shared source of concern among scholars. Visually stimulating and fast-paced content can overload cognitive resources, reducing attention control and increasing distractibility (Gazzaley & Rosen, 2016), possibly adversely affecting school performance. The COVID-19 pandemic further exacerbated the situation, as confinement intensified dependence on digital tools; for example, Guessoum and colleagues (2020) documented an increase in anxiety and depression among adolescents during the pandemic,

attributable to overuse of social media and the general stress of the pandemic context. Recent evidence suggests that the surge in social media and digital device use during the COVID-19 pandemic has had significant and lasting effects on adolescents' mental health, sleep, and digital habits, with both immediate and long-term consequences. In the short term, systematic reviews have demonstrated a comorbidity between prolonged social media use and the onset of psychological disorders, particularly during periods of isolation (Panchal et al., 2021; Meherali et al., 2021). Additionally, the disruption of in-person relationships and the difficulty in maintaining healthy social connections contributed to increased feelings of loneliness (Sharma et al., 2021). In the long term, excessive screen time and late-night digital activity have been associated with sleep disturbances, including delayed sleep onset and reduced sleep quality, due to interference with melatonin production (Jahrami et al., 2021; Lin et al., 2021). This chronic sleep deprivation has further implications for both mental and physical health, perpetuating a cycle of stress and inactivity that may exacerbate pre-existing psychological vulnerabilities (Meherali et al., 2021). Moreover, the shift away from face-to-face interactions and the growing reliance on virtual communication have led to notable changes in how adolescents socialize and form relationships (Walker et al., 2021). These findings highlight the urgent need for educators, caregivers, and mental health professionals to develop and implement targeted interventions that promote digital literacy, emotional resilience, and healthy technology use. As the world transitions into the post-pandemic era, supporting adolescent mental health and fostering balanced digital habits remain critical public health priorities (Meherali et al., 2021).

Social Comparison, Low Self-Esteem, and Adolescent Well-Being

The impact of social media on adolescents' self-esteem and psychological well-being is an issue of growing scientific importance, characterized by multiple facets that deserve in-depth analysis. Social comparison theory, formulated by Festinger in 1954, provides the essential theoretical foundation for understanding this phenomenon, outlining the natural propensity of individuals to compare themselves with others in order to evaluate their opinions and abilities. Research by Krayer et al. (2008) and Myers and Crowther (2009) has shown that this tendency is particularly pronounced during adolescence compared to other life stages. Social media platforms have significantly amplified this social comparison mechanism, turning into virtual arenas where adolescents are constantly exposed to idealized representations of others' lives. Research by Vogel et al. (2014) found that the inherent characteristics of platforms such as

Instagram, Snapchat and Facebook facilitate selective self-presentation and peer monitoring, creating an environment that fosters ascendant social comparison. This phenomenon was further analyzed by Appel et al. (2016) and Seabrook et al. (2016), who established a direct correlation between passive Facebook use and the onset of feelings of envy and sadness. In fact, the impact on adolescents' mental health has been extensively documented by Richards et al. (2015), who found particularly significant effects on self-esteem and general well-being. Karim et al. (2020), further explored this analysis, highlighting how pressure to conform to idealized representations can generate deep feelings of inadequacy. Similarly, research by Fardouly et al. (2015) further demonstrated that frequent exposure to idealized images and lifestyles on social platforms is directly related to decreased self-esteem, increased body dissatisfaction, and the development of disordered eating behaviors. The phenomenon termed "compare and despair" emerges as a central element of this dynamic, characterized by a constant comparison between one's own perceived inadequacies and the seemingly perfect lives of peers. Thus, although social media can potentially strengthen existing ties and facilitate the creation of new connections, studies have shown that inadequate social support increases vulnerability to psychological problems such as anxiety and depression. To address these challenges, Holland & Tiggemann (2016) propose an approach based on promoting digital literacy and the development of critical thinking. This strategy aims to develop adolescents' awareness of the selective nature of social content and digital manipulation techniques. Preventive and therapeutic interventions should focus on fostering internal sources of validation and self-compassion, encouraging the development of real-world interests and relationships as a counterbalance to online validation addiction. The creation of a more authentic and inclusive digital culture, combined with the promotion of mindful SMU practices, emerges as a key strategy to mitigate the negative effects of social comparison on adolescents' mental health. This integrated approach, including digital boundary setting, periods of disconnection, and prioritization of offline experiences, emerges as an essential element in promoting mental well-being and resilience in the digital generation.

Fear of Missing Out (FOMO) and Adolescent Mental Health

The construct of Fear of Missing Out (FOMO) is deeply connected to the dynamics of social comparison, as both contribute to emotional distress in the digital age. While social comparison stems from negative self-evaluation in relation to others, FOMO is marked by the anxiety of being excluded from rewarding social experiences. However, unlike social comparison, which

often occurs passively, FOMO tends to manifest in active, compulsive monitoring of others' online activities.

Recognized as a salient psychological phenomenon—particularly among adolescents—FOMO has become increasingly pervasive with the rise of social media. As described by Przybylski et al. (2013), it involves a persistent sense of apprehension driven by the belief that others are engaging in fulfilling experiences without one's participation. Though the underlying sentiment is not new, digital platforms have transformed its scale and intensity. In contrast to the past, when such feelings were tied to specific events, today's constant flow of updates creates an ongoing "social spectacle," amplifying users' distress.

Research by Elhai et al. (2016) highlights that adolescents who engage heavily with social media are especially vulnerable, often resorting to habitual surveillance of peers. This behavior is exacerbated by exposure to idealized portrayals of success and belonging, which fuel self-doubt and intensify the cycle of comparison and internal criticism (Kuss & Griffiths, 2011). Talukdar (2024) further points to the link between FOMO and broader psychological issues such as cyberbullying, distorted body image, and heightened feelings of loneliness and depression.

FOMO is also a key driver of problematic social media use (PSMU). Chokalingam et al. (2018) found that fear of exclusion compels adolescents toward compulsive engagement with digital platforms, increasing the risk of behavioral addiction. Similarly, Saladino et al. (2024) underscore the role of unmet psychological needs in mediating the impact of FOMO, leading to emotional dysregulation alongside excessive online activity.

Beyond psychological effects, FOMO can have cognitive and physiological consequences. The constant exposure to stimulating content and rapid updates can strain attention, reduce focus, and heighten distractibility (Rosen et al., 2018). Simultaneously, the blue light emitted by screens disrupts melatonin production, contributing to sleep disturbances such as insomnia and daytime fatigue (Cain & Gradisar, 2010; Twenge, 2019).

To counteract these effects, several studies advocate mindfulness practices—such as meditation and conscious breathing—as effective strategies to alleviate anxiety linked to FOMO (Przybylski et al., 2013). Additionally, encouraging offline experiences like sports and in-person socialization can foster a sense of connection and improve overall well-being (Verduyn et al., 2015).

Ultimately, setting boundaries around digital use and integrating periods of digital detox are crucial steps toward cultivating a healthier relationship with technology (Frison & Eggermont, 2017). While social media can offer opportunities for connection, its overuse—particularly

when fueled by fear of exclusion—may lead to anxiety, depression, and addiction. A balanced approach that combines awareness, self-regulation, and meaningful offline engagement is essential for supporting adolescents' psychological health in an increasingly connected world.

Cyberbullying and Its Consequences for Psychological Well-Being

The role of cyberbullying in this context cannot be underestimated, as it contributes significantly to increased feelings of isolation and low self-esteem among young users (Richards et al., 2015). This is of particular concern considering the vulnerability of adolescents, who are still developing their sense of personal identity and value. Cyberbullying, a pervasive form of online aggression, is defined as the deliberate and repeated use of digital communication tools to harass, intimidate or humiliate others. Unlike traditional forms of bullying, which typically occur in face-to-face interactions, cyberbullying exploits the anonymity and ubiquity of the Internet to inflict harm on victims through various online platforms, including social media, messaging apps, and online forums. The anonymity factor often encourages aggressors, allowing them to act without immediate consequences, while the public nature of online platforms exacerbates the harm inflicted on victims (Hinduja & Patchin, 2010). The psychological consequences of cyberbullying can be profound and long-lasting, exerting a significant impact on victims' emotional well-being, self-esteem and overall mental health. Research has consistently shown that adolescents who experience cyberbullying are at an increased risk of developing symptoms of depression, anxiety, and suicidal ideation (Hinduja & Patchin, 2022). The persistent nature of cyberbullying, characterized by its 24/7 accessibility and the possibility of viral spread, can intensify feelings of helplessness and isolation among victims, increasing their psychological distress (Kowalski et al., 2014). Fear of encountering further harassment or retaliation may cause victims to withdraw from social interactions, disengage from school activities, and experience higher levels of stress and hypervigilance. It has also been associated with post-traumatic stress disorder (PTSD), substance abuse and other externalizing behaviors, further highlighting its detrimental impact on adolescents' mental health. Research indicates that victims of cyberbullying often struggle with trust issues, social anxiety and difficulty forming healthy interpersonal relationships (Spears et al., 2015). One of the crucial aspects of cyberbullying research is the role of witnesses: studies have shown that witnesses can both contribute to the perpetuation of cyberbullying and act as interveners to stop the behavior. Adolescents who witness cyberbullying but choose not to intervene often do so for fear of becoming the next target or because of a perceived ineffectiveness in stopping the harassment (Olenik-Shemesh & Heiman,

2017). However, when witnesses take an active role in supporting victims, the likelihood that cyberbullying will continue decreases significantly. In response to the pervasive threat of cyberbullying, several strategies have been proposed to address and prevent this harmful behavior. These strategies include a multi-layered approach that involves collaboration among parents, educators, lawmakers, and technology companies to create safe and supportive online environments for adolescents. At the individual level, equipping adolescents with digital literacy skills, empathy training and assertiveness techniques can improve their ability to recognize, resist and report instances of cyberbullying (Mishra et al., 2020). In addition, school interventions, such as comprehensive anti-bullying policies, peer support programs, and social-emotional learning curricula, play a crucial role in promoting a culture of empathy, respect, and inclusiveness within educational environments (Espelage & Hong, 2017). By promoting positive social norms and witness intervention, schools can empower students to become proactive agents of change, challenging the normalization of cyberbullying and promoting a culture of kindness and mutual respect. In addition, collaboration with technology companies and social platforms is essential to implement robust protection measures and reporting mechanisms to effectively combat cyberbullying. By integrating artificial intelligence, machine learning algorithms, and community moderation strategies, technology companies can proactively identify and remove harmful content, reduce the spread of abusive behavior, and protect vulnerable users from online harassment. Family involvement has also been identified as a crucial protective factor against cyberbullying: studies indicate that parental mediation, open communication, and establishing clear guidelines for online behavior can significantly reduce adolescents' risk of engaging in or becoming victims of cyberbullying. A supportive family environment that promotes resilience and self-confidence can help adolescents navigate online spaces more safely (Nikolaou, 2017). In any case, despite the increase in research on cyberbullying, significant gaps remain in understanding its underlying mechanisms and long-term effects. Future research should focus on developing comprehensive prevention and intervention programs tailored to the specific needs of diverse adolescent populations. In addition, further exploration of the psychological profiles of cyberbullies could help identify early risk factors and inform targeted intervention strategies.

Screen Time and Cognitive-Emotional Development

The psychological impact of time spent in front of screens in the development of children and adolescents has received increasing attention in recent years, especially given the increasingly pervasive integration of digital media into daily life. Numerous studies show that excessive

time spent in front of screens can negatively affect several aspects of cognitive and psychological development. For example, excessive use of digital devices has been shown to be associated with negative cognitive and behavioral outcomes. Studies by Marciano et al. (2021) point out that increased exposure time to screens correlates with reduced growth of brain structures deputed to cognitive control, especially in adolescents, resulting in deficits in executive functions and self-regulation (Marciano et al., 2021). Similarly, Domingues-Montanari (2017) shows that excessive time spent in front of screens is associated with reduced physical and cognitive abilities, as well as increased rates of anxiety and depression among children. This suggests that both the nature and amount of screen exposure time may significantly affect psychological well-being and cognitive development. Another critical area of study concerns the impact of time spent in front of screens on sleep patterns. Hale and Guan (2015) conducted a systematic review that highlights the negative effects of screen exposure time on sleep quality and duration in school-age children and adolescents, highlighting how substitution of rest time using digital devices can lead to sleep deprivation and, consequently, mood disorders and cognitive deficits. Beebe (2011) confirms that sleep deprivation, exacerbated by nighttime use of devices, can intensify pre-existing psychological issues. Again, LeBourgeois et al. (2017) note that most of the studies analyzed show a negative association between screen exposure time and sleep quality, mainly due to delayed falling asleep times and reduced sleep duration. Regarding the qualitative aspect, and thus the type of content consumed during exposure time to screens, some research on children and adolescents has shown that on the one hand, educational applications can promote learning and enhance cognitive abilities. On the other, excessive use of pure entertainment media has been associated with negative emotional consequences, such as increased aggression and reduced empathy. This debate highlights the importance of considering not only the amount of time spent in front of screens, but also the quality of content enjoyed by children and adolescents (Cerniglia & Cimino, 2020). James et al. (2017) support this distinction by emphasizing how exposure to inappropriate content can have deleterious effects on behavior and emotionality. An additional factor influencing the psychological implications of screen exposure time is developmental stage: Anderson and Subrahmanyam (2017) indicate that younger children may not fully understand the content they are exposed to, leading to misinterpretations and inappropriate emotional responses. Adolescents, on the other hand, often use digital media for social interactions, with both positive and negative effects on their interpersonal skills and emotional well-being (Subrahmanyam & Michikyan, 2022). Another relevant aspect concerns the role of parental mediation in screen use: Pate et al. (2011) found that parents who actively limit and

monitor their children's exposure time tend to have children who spend less time in sedentary screen-based activities, which is associated with better psychological outcomes. This suggests that active parental involvement may mitigate some of the negative effects of screen exposure time by promoting healthier habits and encouraging alternative activities that promote cognitive and emotional development. In addition to cognitive and emotional outcomes, time spent in front of screens has been linked to physical health problems, which, in turn, may affect psychological well-being. Excessive screen use is positively associated with obesity, a condition frequently correlated with low self-esteem and depression in children (Domingues-Montanari, 2017). This interconnection between physical health, screen exposure, and psychological well-being suggests that interventions aimed at reducing time spent on digital devices should also consider promoting physical activity to improve overall well-being. Finally, an area of growing interest concerns the impact on psychological development of time spent using in front of video games: For example, on the topic, Granic et al. (2014) state that although much research has focused on the negative aspects of video games, there is evidence indicating that they can also improve cognitive skills, such as problem solving and spatial awareness. This duality suggests that not all time spent in front of screens is harmful, but that the context and content of digital interactions are crucial in shaping psychological outcomes. In conclusion, the psychological implications of screen exposure time in development are complex and influenced by multiple factors, including the type of content consumed, the child's developmental stage, parental mediation, and the interplay between physical health and psychological well-being. The literature suggests that although excessive screen use can lead to negative cognitive and emotional outcomes, there are also potential benefits associated with certain types of digital interaction. Future research should continue to explore these dynamics, with a focus on longitudinal studies that can provide a deeper understanding of the long-term effects of screen exposure time on psychological development.

Digital Literacy as a Protective Factor in Online Environments

Digital literacy has emerged as a fundamental competency in the contemporary digital age, particularly for adolescents who are increasingly exposed to online environments. It encompasses not only the technical skills required to navigate digital platforms but also the critical thinking and ethical considerations necessary for responsible online behavior. The ability to discern reliable information from unreliable sources is a crucial aspect of digital literacy, directly impacting online safety (Bin Naeem & Boulos, 2021). Adolescents equipped with strong digital literacy skills are better positioned to evaluate the credibility of online

content, thereby reducing their susceptibility to misinformation and harmful online interactions (Kozyreva et al., 2020). The importance of digital literacy is further underscored by its role in mitigating the negative psychological effects associated with online engagement, such as cyberbullying and social media addiction. Research suggests that enhancing digital literacy can empower young individuals to engage with digital content in a healthy manner, maintaining a balanced relationship with technology while safeguarding their mental well-being (Bin Naeem & Boulos, 2021). The role of educational institutions in fostering digital literacy is critical. Schools are increasingly recognizing the necessity of integrating digital citizenship education into their curricula, which encompasses teaching students about online privacy, cyberbullying prevention, and responsible social media usage. Studies indicate that when adolescents are educated about the implications of their online behavior, they are more likely to engage in safe practices, such as protecting personal information and reporting inappropriate content (Turner et al., 2017). Moreover, digital literacy education can empower young people to engage with social media in ways that mitigate potential harms while maximizing benefits. This includes understanding privacy settings, recognizing harmful content, and developing critical thinking skills to assess the information encountered online. School-based digital literacy programs are becoming more comprehensive, offering structured guidelines for both educators and students. These programs offer age-appropriate curricula tailored to the developmental stages of adolescents. For younger students, the focus tends to be on basic online safety and privacy, while older students engage in more complex ethical discussions, addressing issues like online identity and digital rights. As these curricula evolve, they aim to not only teach technical skills but also to foster a reflective approach to online behavior, emphasizing ethical reasoning and responsible engagement. Parental involvement is another significant factor in promoting digital literacy and online safety. Research suggests that parents play a vital role in guiding their children's online experiences, particularly in monitoring internet usage and discussing the potential risks associated with digital engagement (Reid Chassiakos et al., 2016). By fostering open communication about online activities and encouraging critical discussions about digital content, parents can significantly enhance their children's digital literacy and awareness of online safety issues. A collaborative approach between parents and educational institutions creates a supportive environment that empowers adolescents to navigate the digital landscape responsibly. **Family-based strategies** are often central to the way digital literacy is nurtured at home. For example, creating **media use plans** and engaging in **co-viewing** strategies can provide parents with practical tools to help their children use digital media safely. Additionally, the approach to digital literacy may vary significantly across different **cultural contexts**, with

some communities prioritizing formal education in schools, while others focus more heavily on family-oriented interventions. In addition to formal education and parental guidance, community programs aimed at enhancing digital literacy among adolescents have shown promise in promoting online safety. Initiatives that focus on youth empowerment through digital literacy education equip young individuals with the necessary skills to engage with technology while also encouraging them to become advocates for safe online practices within their communities. These programs often emphasize the importance of understanding digital rights, such as privacy and freedom of expression, which are essential for fostering a safe online environment. By participating in community-based digital literacy initiatives, adolescents can develop a sense of agency and responsibility in their online interactions. The broader implications of digital literacy extend beyond individual safety and encompass societal concerns. As adolescents become more adept at navigating digital spaces, they are better equipped to contribute positively to online communities and combat the spread of misinformation (Kozyreva et al., 2020). This collective responsibility underscores the necessity of fostering a digitally literate generation that values ethical engagement and critical thinking in their online interactions. Moreover, the interplay between SMU, digital literacy, and mental health is becoming increasingly complex due to the rapid evolution of technology and its integration into daily life. As adolescents increasingly rely on digital platforms for social interaction, education, and entertainment, understanding the implications of this reliance becomes paramount. Future digital literacy programs must be adaptable to new platforms and emerging usage patterns. As digital environments evolve, so too must educational strategies to address the risks associated with new technologies and the ways in which adolescents interact with them. This requires ongoing research and a flexible approach to digital literacy education that can address both the opportunities and challenges of the digital age. In conclusion, the role of digital literacy in promoting online safety among adolescents is multifaceted and indispensable. It encompasses technical skills, critical thinking, ethical considerations, and community engagement. Educational institutions, parents, and community programs must collaborate to enhance digital literacy among young individuals, equipping them with the necessary tools to navigate the digital landscape safely. By prioritizing digital literacy education and developing tailored, culturally sensitive strategies, society can cultivate informed and responsible digital citizens who can navigate the complexities of the online world. As the digital environment continues to evolve, ongoing research and intervention strategies will be essential in addressing the challenges and opportunities presented by digital literacy in fostering a safe online space for adolescents. To provide a clearer overview of the

empirical evidence, Table 1 presents a selection of the main findings discussed in the previous sections:

Table 1. Key Studies

Authors	Year	Study Type	Key Findings
Ahmed et al.	2024	Meta-analysis	PSMU linked to anxiety, depression, and sleep disorders, especially in girls under 18.
Bin Naeem & Boulos	2021	Narrative review	Digital literacy reduces risk of misinformation and PSMU.
Cain & Gradisar	2010	Longitudinal study	Night-time screen use disrupts melatonin, sleep quality, and emotional regulation.
Domingues-Montanari	2017	Narrative review	Gaming excess linked to cognitive, emotional, and self-regulation impairments.
Fardouly et al.	2015	Randomized experimental study	Idealized images on social media linked to body dissatisfaction and disordered eating.
Granic et al.	2014	Narrative review	Video games can improve cognition but pose risks with excessive use.
Kowalski et al.	2014	Narrative review and Meta-analysis	Cyberbullying impacts self-esteem, well-being, and social isolation.
Marciano et al.	2021	Scoping review	High screen time linked to reduced executive brain function development.
Marino et al.	2018	Systematic review and Meta-analysis	Problematic Facebook use associated with psychological

			distress via social comparison.
Przybylski et al.	2013	Empirical Studies	FOMO related to anxiety, depression, and compulsive social media use.
Turner et al.	2017	Narrative Review	School digital literacy programs improve online safety and critical thinking.
Vogel et al.	2014	Empirical Studies	Passive social media use leads to lower self-esteem and depressive symptoms.

Discussion

The present analysis suggests that SMU exerts a complex and multifaceted influence on adolescents' mental health. A growing body of research highlights a consistent correlation between problematic engagement with digital platforms and increased levels of anxiety, depression, and low self-esteem. Notably, Ahmed et al. (2024) identified particularly detrimental effects among adolescents under the age of 18—especially girls—whose vulnerability often stems from appearance-based social comparison and diminished self-worth. Gender emerges as a significant moderating factor, with female adolescents more susceptible to body dissatisfaction and depressive symptoms (Ahmed et al., 2024; Fardouly et al., 2015). Age, too, plays a critical role: younger adolescents tend to be more emotionally reactive and impressionable in response to online interactions, whereas older teens, despite greater cognitive maturity, frequently experience performance-oriented pressures exacerbated by digital platforms. Similarly, sociocultural norms shape adolescents' experiences of SMU by influencing how digital content is interpreted and internalized. As Holland and Tiggemann (2016) point out, cultural ideals regarding beauty, success, and popularity can intensify the impact of social comparison, especially in environments where conformity to online standards is strongly reinforced. Among the psychological processes most frequently identified across studies, social comparison occupies a central role. Exposure to idealized representations of others' lives—often curated and filtered on platforms like Instagram or TikTok—can provoke feelings of inadequacy and self-judgment among adolescents. As documented by Vogel et al.

(2014) and Appel et al. (2016), these processes contribute to lower self-esteem and increased depressive symptoms. This effect appears particularly pronounced when social media is used in a more passive way, such as browsing without interaction, which can amplify feelings of exclusion and envy. Conversely, more active forms of engagement—such as content creation or direct interaction—may foster a sense of connectedness and emotional validation (Verduyn et al., 2017). In this context, another important construct is Fear of Missing Out (FOMO), which describes the anxiety of being excluded from rewarding social experiences. This phenomenon is reinforced by the real-time, continuous nature of digital platforms, where adolescents may feel compelled to remain constantly connected. High levels of FOMO have been associated with compulsive use of social media, emotional dysregulation, and symptoms of anxiety and depression (Przybylski et al., 2013; Talukdar, 2024). Although this narrative review did not systematically extract the psychometric tools used in each included study, it is important to note that several validated instruments are commonly employed in the literature to assess Problematic Social Media Use (PSMU) and related psychological outcomes in adolescents. For instance, the Bergen Social Media Addiction Scale (BSMAS) is a widely used self-report questionnaire designed to measure dependence on social media, demonstrating good psychometric properties in adolescent populations (Andreassen, Pallesen, & Griffiths, 2016). Similarly, the Hospital Anxiety and Depression Scale (HADS) has been validated for use with adolescents, effectively distinguishing between individuals with and without anxiety or depressive disorders (White et al., 1999). The Pittsburgh Sleep Quality Index (PSQI) is another instrument frequently utilized to assess sleep quality in adolescents, with studies supporting its validity and reliability in this age group (De la Vega et al., 2015). While not all studies included in this review specified the measurement tools employed, the frequent use of these validated instruments in the literature underscores the importance of standardized assessments in research focusing on adolescents. Furthermore, researches show that COVID-19 pandemic amplified this dynamic: due to lockdowns and social distancing, screen time increased dramatically, exacerbating feelings of isolation and heightening adolescents' psychological vulnerability (Meherali et al., 2021). In parallel, the prolonged and unregulated use of digital devices, especially during evening hours, has been shown to disrupt sleep patterns by interfering with melatonin production (Cain & Gradisar, 2010; Twenge, 2019). Sleep deprivation in turn impairs emotional regulation, concentration, and academic performance (Domingues-Montanari, 2017), creating a negative feedback loop that further aggravates psychological symptoms. These findings are consistent with emerging evidence on the long-term impact of pandemic-related digital behaviors. Studies have indicated that the increased

reliance on social media and digital interactions during the pandemic not only intensified adolescents' immediate psychological distress but may also have contributed to lasting changes in their digital habits and social functioning (Walker et al., 2021). Prolonged exposure to online environments, often at the expense of in-person connections, has been linked to persistent feelings of loneliness and difficulties in reestablishing face-to-face relationships post-pandemic. Additionally, the continued disruption of sleep patterns—initially triggered by irregular screen use—raises concerns about the sustained effects on mental health and overall well-being. These insights underscore the need for proactive strategies aimed at promoting digital balance and psychosocial support in adolescent populations, especially as society adapts to new, hybrid forms of socialization and learning. Despite the well-documented risks associated with social media use among adolescents, it is crucial to acknowledge that its effects are not universally negative. For some young people—particularly those who experience difficulties in forming or maintaining offline relationships—digital platforms can provide meaningful opportunities for self-expression, emotional connection, and peer support (Deters & Mehl, 2013; Schønning et al., 2020). These potentially protective dynamics underscore the need to move beyond reductionist measures such as screen time, and instead prioritize the quality, context, and intentionality of online engagement. In this context, digital literacy emerges as a key protective factor. Adolescents equipped with strong digital competencies are better positioned to identify manipulative content, resist peer pressure, and regulate their social media use in a more mindful and autonomous manner. As such, digital education should be promoted not merely as the development of technical skills, but as the cultivation of cognitive and emotional resources essential for navigating digital environments in a safe, balanced, and informed way.

Conclusion

Adolescents' use of social media is an unavoidable reality in the contemporary world and, as evidenced in the literature, can have both positive and negative effects on mental health. While digital platforms offer opportunities for social connection, personal expression, and emotional support, they can also exacerbate problems such as anxiety, depression, and low self-esteem, especially when use becomes compulsive and socially oriented. The results analyzed confirm that the impact of social media depends not only on time spent online, but also on the quality of interaction and content consumed. Passive use, characterized by watching content without

interaction, was associated with greater psychological distress, while more active use may foster more positive experiences. Internalizing unrealistic aesthetic standards, fear of being excluded from social experiences, and impaired sleep quality are among the main mechanisms through which SMU negatively affects adolescent well-being. However, appropriate digital education and increased awareness about platform use can help mitigate these risks and promote a more balanced and safe online experience.

Limit of the research and future prospective

Despite growing scientific attention to the topic, several limitations must be acknowledged. A significant portion of the reviewed research relies on cross-sectional designs, which offer only a snapshot of the relationship between social media use and mental health, without establishing clear causal links. The bidirectional nature of the association between PSMU and psychological distress further complicates interpretation: vulnerable adolescents may be more inclined to overuse social media, while excessive use may, in turn, exacerbate their mental health issues. To disentangle these dynamics, future studies should prioritize longitudinal and experimental methodologies capable of clarifying underlying causal mechanisms.

Another limitation concerns the predominant reliance on self-reported data, which is susceptible to perceptual and subjective biases. Integrating more objective approaches—such as behavioral tracking or physiological measures—would enhance the reliability of findings and yield a more comprehensive understanding of adolescents' digital behaviors and mental health outcomes.

Emerging forms of digital interaction, including livestreaming platforms, viral challenges, and the aestheticization of the self through influencer marketing, also warrant dedicated investigation. These formats appear to influence adolescent experiences in distinct ways, intensifying social pressure, shaping identity construction, and amplifying social comparison processes. Although research on these phenomena remains limited, their increasing prominence underscores the need for studies that explore the psychological mechanisms by which they affect self-esteem, attention regulation, and emotional well-being.

Furthermore, the limited diversity of participant samples poses a challenge to the generalizability of current findings. Many studies focus on specific, relatively homogeneous populations, which restricts the applicability of results across broader contexts. Future research should strive for greater inclusivity by incorporating diverse socioeconomic backgrounds,

cultural contexts, gender identities, and geographic regions to ensure that insights and interventions are both equitable and relevant. An additional area of importance involves digital literacy and preventive strategies. Promoting targeted digital education can help adolescents better understand online dynamics and develop a more balanced relationship with technology. Programs that foster critical thinking, emotional awareness, and self-regulation may mitigate the risks associated with PSMU and support healthier digital engagement.

Finally, given the central role of social media during the COVID-19 pandemic, it is essential to examine the long-term psychological consequences of increased digital use during that period. Future research should assess whether pandemic-related changes in usage patterns have had lasting effects on adolescent mental health.

Acknowledgements, Grants and Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

Declaration of Interest statement

Declarations of interest: none

Authors' contribution

Marta Sechi: Conceptualization, Methodology, Investigation, Data Curation, Writing - Original Draft. Valeria Saladino: Methodology, Investigation, Data Curation, Writing - Original Draft. Danilo Calaresi: Methodology, Validation, Formal Analysis, Writing - Review & Editing, Visualization. Fiorenza Giordano: Resources, Visualization, Validation, Project Administration, Supervision. Valeria Verrastro: Methodology, Investigation, Formal Analysis, Writing - Review & Editing, Supervision.

References

Ahmed, O., Walsh, E. I., Dawel, A., Alateeq, K., Espinoza Oyarce, D. A., & Cherbuin, N. (2024). Social media use, mental health and sleep: A systematic review with meta-analyses. *Journal of affective disorders*, *367*, 701–712. https://doi.org/10.1016/j.jad.2024.08.193

Anderson, D. R., Subrahmanyam, K., & Cognitive Impacts of Digital Media Workgroup (2017). Digital Screen Media and Cognitive Development. *Pediatrics*, *140*(Suppl 2), S57–S61. https://doi.org/10.1542/peds.2016-1758C

Andreassen, C. S., Pallesen, S., & Griffiths, M. D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive behaviors*, *64*, 287–293. https://doi.org/10.1016/j.addbeh.2016.03.006

Appel, H., Gerlach, A. L., & Crusius, J. (2016). The interplay between Facebook use, social comparison, envy, and depression. *Current Opinion in Psychology*, *9*, 44-49. https://doi.org/10.1016/j.copsyc.2015.10.006

Beebe D. W. (2011). Cognitive, behavioral, and functional consequences of inadequate sleep in children and adolescents. *Pediatric clinics of North America*, *58*(3), 649–665. https://doi.org/10.1016/j.pcl.2011.03.002

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review*, *41*, 27-36. https://doi.org/10.1016/j.childyouth.2014.03.001

Bin Naeem, S., & Kamel Boulos, M. N. (2021). COVID-19 Misinformation Online and Health Literacy: A Brief Overview. *International journal of environmental research and public health*, *18*(15), 8091. https://doi.org/10.3390/ijerph18158091

Brenhouse, H. C., & Andersen, S. L. (2011). Developmental trajectories during adolescence in males and females: a cross-species understanding of underlying brain changes. *Neuroscience and biobehavioral reviews*, *35*(8), 1687–1703. https://doi.org/10.1016/j.neubiorev.2011.04.013

Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep medicine*, *11*(8), 735–742. https://doi.org/10.1016/j.sleep.2010.02.006

Cerniglia, L., & Cimino, S. (2020). A Reflection on Controversial Literature on Screen Time and Educational Apps Use in 0-5 Years Old Children. *International journal of environmental research and public health*, *17*(13), 4641. https://doi.org/10.3390/ijerph17134641

Chokalingam, L., Matthee, M., & Hattingh, M. J. (2019). It seems to have a hold on us: Social media self-regulation of students. In *ICT Education: 47th Annual Conference of the Southern African Computer Lecturers' Association, SACLA 2018, Gordon's Bay, South Africa, June 18–20, 2018, Revised Selected Papers 47* (pp. 78-92). Springer International Publishing. https://doi.org/10.1007/978-3-030-05813-5_6

De la Vega, R., Tomé-Pires, C., Solé, E., Racine, M., Castarlenas, E., Jensen, M. P., & Miró, J. (2015). The Pittsburgh Sleep Quality Index: Validity and factor structure in young people. *Psychological Assessment*, *27*(4), e22–e27. https://doi.org/10.1037/pas0000128

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), 10.1177/1948550612469233. https://doi.org/10.1177/1948550612469233

Domingues-Montanari S. (2017). Clinical and psychological effects of excessive screen time on children. *Journal of paediatrics and child health*, *53*(4), 333–338. https://doi.org/10.1111/jpc.13462

Elhai, J. D., Levine, J. C., Dvorak, R. D., & Hall, B. J. (2016). Fear of missing out, need for touch, anxiety and depression are related to problematic smartphone use. *Computers in Human Behavior*, *63*, 509–516. https://doi.org/10.1016/j.chb.2016.05.079

Espelage, D. L., & Hong, J. S. (2017). Cyberbullying prevention and intervention efforts: current knowledge and future directions. *The Canadian Journal of Psychiatry*, *62*(6), 374-380. https://doi.org/10.1177/0706743716684793

Espelage, D. L., Hong, J. S., & Valido, A. (2024). Cyberbullying. In P. A. Schutz & K. R. Muis (Eds.), *Handbook of educational psychology* (4th ed., pp. 654–673). Routledge.

Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: the impact of Facebook on young women's body image concerns and mood. *Body image*, *13*, 38–45. https://doi.org/10.1016/j.bodyim.2014.12.002

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7(2)*, 117-140. https://doi.org/10.1177/001872675400700202

Frison, E., & Eggermont, S. (2017). Browsing, Posting, and Liking on Instagram: The Reciprocal Relationships Between Different Types of Instagram Use and Adolescents' Depressed Mood. *Cyberpsychology, behavior and social networking*, *20*(10), 603–609. https://doi.org/10.1089/cyber.2017.0156

Gazzaley, A., & Rosen, L. D. (2016**).** *The distracted mind: Ancient brains in a high-tech world.* The MIT Press. https://muse.jhu.edu/book/65912

Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *The American psychologist*, *69*(1), 66–78. https://doi.org/10.1037/a0034857

Guessoum, S. B., Lachal, J., Radjack, R., Carretier, E., Minassian, S., Benoit, L., & Moro, M. R. (2020).

Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry research*, *291*, 113264. https://doi.org/10.1016/j.psychres.2020.113264

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep medicine reviews*, *21*, 50–58. https://doi.org/10.1016/j.smrv.2014.07.

Hinduja, S., & Patchin, J. W. (2022). Bullying and cyberbullying offending among US youth: The influence of six parenting dimensions. *Journal of Child and Family Studies, 31*, 1454–1473. https://doi.org/10.1007/s10826-021-02208-7

Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archives of suicide research : official journal of the International Academy for Suicide Research*, *14*(3), 206–221. https://doi.org/10.1080/13811118.2010.494133

Holland, G., & Tiggemann, M. (2016). A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body image*, *17*, 100–110. https://doi.org/10.1016/j.bodyim.2016.02.008

Jahrami, H., BaHammam, A., Bragazzi, N., Saif, Z., Faris, M., & Vitiello, M. (2021). Sleep problems during the covid-19 pandemic by population: a systematic review and meta-analysis. Journal of Clinical Sleep Medicine, 17(2), 299-313. https://doi.org/10.5664/jcsm.8930

James, C., Davis, K., Charmaraman, L., Konrath, S., Slovak, P., Weinstein, E., & Yarosh, L. (2017). Digital Life and Youth Well-being, Social Connectedness, Empathy, and Narcissism. *Pediatrics*, *140*(Suppl 2), S71–S75. https://doi.org/10.1542/peds.2016-1758F

Karim, F., Oyewande, A. A., Abdalla, L. F., Chaudhry Ehsanullah, R., & Khan, S. (2020). Social Media Use and Its Connection to Mental Health: A Systematic Review. *Cureus*, *12*(6), e8627. https://doi.org/10.7759/cureus.8627

Keles, B., McCrae, N., & Grealish, A. (2019). A systematic review: the influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth*, *25*(1), 79–93. https://doi.org/10.1080/02673843.2019.1590851

Kim, H. H.-s. (2017). The impact of online social networking on adolescent psychological well-being (WB): A population-level analysis of Korean school-aged children. *International Journal of Adolescence and Youth*, *22*(3), 364–376. https://doi.org/10.1080/02673843.2016.1197135

Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattanner, M. R. (2014). Bullying in the digital age: a critical review and meta-analysis of cyberbullying research among youth. *Psychological bulletin*, *140*(4), 1073–1137. https://doi.org/10.1037/a0035618

Kozyreva, A., Lewandowsky, S., & Hertwig, R. (2020). Citizens Versus the Internet: Confronting Digital Challenges With Cognitive Tools. *Psychological Science in the Public Interest*, *21*(3), 103-156. https://doi.org/10.1177/1529100620946707

Krayer, A., Ingledew, D. K., & Iphofen, R. (2008). Social comparison and body image in adolescence: a grounded theory approach. *Health education research*, *23*(5), 892–903. https://doi.org/10.1093/her/cym076

Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction--a review of the psychological literature. *International journal of environmental research and public health*, *8*(9), 3528–3552. https://doi.org/10.3390/ijerph8093528

LeBourgeois, M. K., Hale, L., Chang, A. M., Akacem, L. D., Montgomery-Downs, H. E., & Buxton, O. M. (2017). Digital Media and Sleep in Childhood and Adolescence. *Pediatrics*, *140*(Suppl 2), S92–S96. https://doi.org/10.1542/peds.2016-1758J

Lin, Y., Liu, Z., Li, S., Li, C., Zhang, L., Li, N. & Li, Q. (2021). Burden of sleep disturbance during covid-19 pandemic: a systematic review. Nature and Science of Sleep, Volume 13, 933-966. https://doi.org/10.2147/nss.s312037

Marciano, L., Camerini, A. L., & Morese, R. (2021). The Developing Brain in the Digital Era: A Scoping Review of Structural and Functional Correlates of Screen Time in Adolescence. *Frontiers in psychology*, *12*, 671817. https://doi.org/10.3389/fpsyg.2021.671817

Marino, C., Gini, G., Vieno, A., & Spada, M. M. (2018). The associations between problematic Facebook use, psychological distress and well-being among adolescents and young adults: A systematic review and meta-analysis. *Journal of affective disorders*, *226*, 274–281. https://doi.org/10.1016/j.jad.2017.10.007

McCrae, N., Gettings, S., & Purssell, E. (2017). Social media and depressive symptoms in childhood

and adolescence: A systematic review. *Adolescent Research Review, 2*, 315–330. https://doi.org/10.1007/s40894-017-0053-4

Meherali, S., Punjani, N., Louie-Poon, S., Abdul Rahim, K., Das, J. K., Salam, R. A., & Lassi, Z. S. (2021). Mental Health of Children and Adolescents Amidst COVID-19 and Past Pandemics: A Rapid Systematic Review. *International Journal of Environmental Research and Public Health*, *18*(7), 3432. https://doi.org/10.3390/ijerph18073432

Mishra, S., Prasad, S., & Mishra, S. (2020). Multilingual Joint Fine-tuning of Transformer models for identifying Trolling, Aggression and Cyberbullying at TRAC 2020. *Workshop on Trolling, Aggression and Cyberbullying*.

Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of abnormal psychology*, *118*(4), 683–698. https://doi.org/10.1037/a0016763

Nikolaou D. (2017). Does cyberbullying impact youth suicidal behaviors?. *Journal of health economics*, *56*, 30–46. https://doi.org/10.1016/j.jhealeco.2017.09.009

Olenik-Shemesh, D., & Heiman, T. (2017). Cyberbullying Victimization in Adolescents as Related to Body Esteem, Social Support, and Social Self-Efficacy. *The Journal of Genetic Psychology*, *178*(1), 28–43. https://doi.org/10.1080/00221325.2016.1195331

Panchal, U., Pablo, G., Franco, M., Moreno, C., Parellada, M., Arango, C., … & Fusar-Poli, P. (2021). The impact of covid-19 lockdown on child and adolescent mental health: systematic review. European Child & Adolescent Psychiatry, 32(7), 1151-1177. https://doi.org/10.1007/s00787-021-01856-w

Pate, R. R., Mitchell, J. A., Byun, W., & Dowda, M. (2011). Sedentary behaviour in youth. *British journal of sports medicine*, *45*(11), 906–913. https://doi.org/10.1136/bjsports-2011-090192

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

Przybylski, A. K., & Weinstein, N. (2019). Digital Screen Time Limits and Young Children's Psychological Well-Being: Evidence From a Population-Based Study. *Child development*, *90*(1), e56–e65. https://doi.org/10.1111/cdev.13007

Reid Chassiakos, Y. L., Radesky, J., Christakis, D., Moreno, M. A., Cross, C., & COUNCIL ON COMMUNICATIONS AND MEDIA (2016). Children and Adolescents and Digital Media. *Pediatrics*, *138*(5), e20162593. https://doi.org/10.1542/peds.2016-2593

Richards, D., Caldwell, P. H., & Go, H. (2015). Impact of social media on the health of children and young people. *Journal of Paediatrics and Child Health*, *51*(12), 1152–1157. https://doi.org/10.1111/jpc.13023

Rosen, L. D., Carrier, L. M., Pedroza, J. A., Elias, S., O'Brien, K. M., Lozano, J., Kim, K., Cheever, N. A., Bentley, J., & Ruiz, A. (2018). The Role of Executive Functioning and Technological Anxiety (FOMO) in College Course Performance as Mediated by Technology Usage and Multitasking Habits. *Psicologia Educativa*, *24*(1), 14–25. https://doi.org/10.5093/psed2018a3

Sala, A., Porcaro, L., & Gómez, E. (2024). Social media use and adolescents' mental health and well-being: An umbrella review. *Computers in Human Behavior Reports, 14*, 100404. https://doi.org/10.1016/j.chbr.2024.100404

Saladino, V., Verrastro, V., Cannavò, M., & others. (2024). Emotion dysregulation and problematic social media use: The role of need fulfillment and fear of missing out. *Current Psychology, 43*, 22200–22211. https://doi.org/10.1007/s12144-024-06005-5

Seabrook, E. M., Kern, M. L., & Rickard, N. S. (2016). Social Networking Sites, Depression, and Anxiety: A Systematic Review. *JMIR mental health*, *3*(4), e50. https://doi.org/10.2196/mental.5842

Schønning, V., Hjetland, G. J., Aarø, L. E., & Skogen, J. C. (2020). Social Media Use and Mental Health and Well-Being Among Adolescents - A Scoping Review. *Frontiers in psychology*, *11*, 1949. https://doi.org/10.3389/fpsyg.2020.01949

Sharma, M., Aggarwal, S., Madaan, P., Saini, L., & Bhutani, M. (2021). Impact of covid-19 pandemic on sleep in children and adolescents: a systematic review and meta-analysis. Sleep Medicine, 84, 259-267. https://doi.org/10.1016/j.sleep.2021.06.002

Spears, B. A., Taddeo, C. M., Daly, A. L., Stretton, A., & Karklins, L. T. (2015). Cyberbullying, help-seeking and mental health in young Australians: Implications for public health. *International*

Journal of Public Health, *60*(2), 219–226. https://doi.org/10.1007/s00038-014-0642-y

Subrahmanyam, K., & Michikyan, M. (2022). Methodological and conceptual issues in digital media research. *J., Nesi, E., Telzer, M. Prinstein,(Eds.), Handbook of adolescent digital media use and mental health*, 9-38.

Talukdar, J. (2024). The Impact of Social Media on Adolescent Mental Health: A Comprehensive Review. *Integrated Journal for Research in Arts and Humanities*, *4*(4), 98–104. https://doi.org/10.55544/ijrah.4.4.16

Turner, K. H., Jolls, T., Hagerman, M. S., O'Byrne, W., Hicks, T., Eisenstock, B., & Pytash, K. E. (2017). Developing Digital and Media Literacies in Children and Adolescents. *Pediatrics*, *140*(Suppl 2), S122–S126. https://doi.org/10.1542/peds.2016-1758P

Twenge, J. (2006). *Generation me: Why we expect more from technology and less from each other*. New York: Basic Books.

Twenge, J. M. (2019). More time on technology, less happiness? Associations between digital-media use and psychological well-being. *Current Directions in Psychological Science*, *28*(4), 372–379. https://doi.org/10.1177/0963721419838244

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

Walker, R., Usher, K., Jackson, D., Reid, C., Hopkins, K., Shepherd, C., & Marriott, R. (2021). Connection to... addressing digital inequities in supporting the well-being of young indigenous australians in the wake of covid-19. International Journal of Environmental Research and Public Health, 18(4), 2141. https://doi.org/10.3390/ijerph18042141

White, D., Leach, C., Sims, R., Atkinson, M., & Cottrell, D. (1999). Validation of the Hospital Anxiety and Depression Scale for use with adolescents. *The British journal of psychiatry : the journal of mental science*, *175*, 452–454. https://doi.org/10.1192/bjp.175.5.452

Zadbood, A., Chen, J., Leong, Y. C., Norman, K. A., & Hasson, U. (2017). How we transmit memories to other brains: Constructing shared neural representations via communication. *Cerebral Cortex*, *27*(12), 4988–5000. https://doi.org/10.1093/cercor/bhx177