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Social Media and Youth Mental Health

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The U.S. Surgeon General's Advisory



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About the Advisory

A Surgeon General's Advisory is a public statement that calls the American people's attention to an urgent public health issue and provides recommendations for how it should be addressed. Advisories are reserved for significant public health challenges that require the nation's immediate awareness and action.

This Advisory calls attention to the growing concerns about the effects of social media on youth mental health. It explores and describes the current evidence on the positive and negative impacts of social media on children and adolescents, some of the primary areas for mental health and well-being concerns, and opportunities for additional research to help understand the full scope and scale of social media's impact. This document is not an exhaustive review of the literature. Rather, it was developed through a substantial review of the available evidence, primarily found via electronic searches of research articles published in English and resources suggested by a wide range of subject matter experts, with priority given to, but not limited to, meta-analyses and systematic literature reviews. It also offers actionable recommendations for the institutions that can shape online environments — policymakers and technology companies — as well as for what parents and caregivers, young people, and researchers can do.

For additional background and to read other Surgeon General's Advisories, visit **SurgeonGeneral.gov**

Social Media and Youth Mental Health

Social media[1] use by youth is nearly universal. Up to 95% of youth ages 13–17 report using a social media platform, with more than a third saying they use social media "almost constantly."[2] Although age 13 is commonly the required minimum age used by social media platforms in the U.S.,[3] nearly 40% of children ages 8–12 use social media.[4] Despite this widespread use among children and adolescents, robust independent safety analyses on the impact of social media on youth have not yet been conducted. There are increasing concerns among researchers, parents and caregivers, young people, healthcare experts, and others about the impact of social media on youth mental health.[5, 6]

More research is needed to fully understand the impact of social media; however, the current body of evidence indicates that while social media may have benefits for some children and adolescents, there are ample indicators that social media can also have a profound risk of harm to the mental health and well-being of children and adolescents. At this time, we do not yet have enough evidence to determine if social media is sufficiently safe for children and adolescents. We must acknowledge the growing body of research about potential harms, increase our collective understanding of the risks associated with social media use, and urgently take action to create safe and healthy digital environments that minimize harm and safeguard children's and adolescents' mental health and well-being during critical stages of development.

Up to 95% of youth ages 13–17 report using a social media platform, with more than a third saying they use social media "almost constantly."

Social Media Has Both Positive and Negative Impacts on Children and Adolescents

The influence of social media on youth mental health is shaped by many complex factors, including, but not limited to, the amount of time children and adolescents spend on platforms, the type of content they consume or are otherwise exposed to, the activities and interactions social media affords, and the degree to which it disrupts activities that are essential for health like sleep and physical activity.[6] Importantly, different children and adolescents are affected by social media in different ways, based on their individual strengths and vulnerabilities, and based on cultural, historical, and socio-economic factors.[7, 8] There is broad agreement among the scientific community that social media has the potential to both benefit and harm children and adolescents.[6, 9]

Brain development is a critical factor to consider when assessing the risk for harm. Adolescents, ages 10 to 19, are undergoing a highly sensitive period of brain development.[10, 11] This is a period when risk-taking behaviors reach their peak, when well-being experiences the greatest fluctuations, and when mental health challenges such as depression typically emerge.[12, 13, 14] Furthermore, in early adolescence, when identities and sense of self-worth are forming, brain development is especially susceptible to social pressures, peer opinions, and peer comparison.[11, 13] Frequent social media use may be associated with distinct changes in the developing brain in the amygdala (important for emotional learning and behavior) and the prefrontal cortex (important for impulse control, emotional regulation, and moderating social behavior), and could increase sensitivity to social rewards and punishments.[15, 16] As such, adolescents may experience heightened emotional sensitivity to the communicative and interactive nature of social media.[16] Adolescent social media use is predictive of a subsequent decrease in life satisfaction for certain developmental stages including for girls 11–13 years old and boys 14–15 years old.[17] Because adolescence is a vulnerable period of brain development, social media exposure during this period warrants additional scrutiny.

The Potential Benefits of Social Media Use Among Children and Adolescents

Social media can provide benefits for some youth by providing positive community and connection with others who share identities, abilities, and interests. It can provide access to important information and create a space for self-expression.[9] The ability to form and maintain friendships online and develop social connections are among the positive effects of social media use for youth.[18, 19] These relationships can afford opportunities to have positive interactions with more diverse peer groups than are available to them offline and can provide important social support to youth.[18] The buffering effects against stress that online social support from peers may provide can be especially important for youth who are often marginalized, including racial, ethnic, and sexual and gender minorities.[20, 21, 22] For example, studies have shown that social media may support the mental health and well-being of lesbian, gay, bisexual, asexual, transgender, queer, intersex and other youths by enabling peer connection, identity development and management, and social support.[23] Seven out of ten adolescent girls of color report encountering positive or identity-affirming content related to race across social media platforms.[24] A majority of adolescents report that social media helps them feel more accepted (58%), like they have people who can support them through tough times (67%), like they have a place to show their creative side (71%), and more connected to what's going on in their friends' lives (80%).[25] In addition, research suggests that social media-based and other digitally-based mental health interventions may also be helpful for some children and adolescents by promoting help-seeking behaviors and serving as a gateway to initiating mental health care.[8, 26, 27, 28, 29]

The Potential Harms of Social Media Use Among Children and Adolescents

Over the last decade, evidence has emerged identifying reasons for concern about the potential negative impact of social media on children and adolescents.

A longitudinal cohort study of U.S. adolescents aged 12–15 (n=6,595) that adjusted for baseline mental health status found that adolescents who spent more than 3 hours per day on social media faced double the risk of experiencing poor mental health outcomes including symptoms of depression and anxiety.[30]

As of 2021, 8th and 10th graders now spend an average of 3.5 hours per day on social media.[31] In a unique natural experiment that leveraged the staggered introduction of a social media platform across U.S. colleges, the roll-out of the platform was associated with an increase in depression (9% over baseline) and anxiety (12% over baseline) among college-aged youth (n = 359,827 observations).[32] The study's co-author also noted that when applied across the entirety of the U.S. college population, the introduction of the social media platform may have contributed to more than 300,000 new cases of depression.[32, 33] If such sizable effects occurred in college-aged youth, these findings raise serious concerns about the risk of harm from social media exposure for children and adolescents who are at a more vulnerable stage of brain development.

Limits on the use of social media have resulted in mental health benefits for young adults and adults. A small, randomized controlled trial in college-aged youth found that limiting social media use to 30 minutes daily over three weeks led to significant improvements in depression severity.[34] This effect was particularly large for those with high baseline levels of depression who saw an improvement in depression scores by more than 35%.[35] Another randomized controlled trial among young adults and adults found that deactivation of a social media platform for four weeks improved subjective well-being (i.e., self-reported happiness, life satisfaction, depression, and anxiety) by about 25–40% of the effect of psychological interventions like self-help therapy, group training, and individual therapy.[36]

In addition to these recent studies, correlational research on associations between social media use and mental health has indicated reason for concern and further investigation. These studies point to a higher relative concern of harm in adolescent girls and those already experiencing poor mental health, [37, 38, 39] as well as for particular health outcomes like cyberbullying-related depression,[40] body image and disordered eating behaviors,[41] and poor sleep quality linked to social media use.[42] For example, a study conducted among 14-year-olds (n = 10,904) found that greater social media use predicted poor sleep, online harassment, poor body image, low self-esteem, and higher depressive symptom scores with a larger association for girls than boys.[43] A majority of parents of adolescents say they are somewhat, very, or extremely worried that their child's use of social media could lead to problems with anxiety or depression (53%), lower self-esteem (54%), being harassed or bullied by others (54%), feeling pressured to act a certain way (59%), and exposure to explicit content (71%).[44]

Scientific evidence suggests that harmful content exposure as well as excessive and problematic social media use are primary areas for concern.

Potential Risk of Harm from Content Exposure

Extreme, inappropriate, and harmful content continues to be easily and widely accessible by children and adolescents. This can be spread through direct pushes, unwanted content exchanges, and algorithmic designs. In certain tragic cases, childhood deaths have been linked to suicide- and self-harm-related content and risk-taking challenges on social media platforms.[45, 46] This content may be especially risky for children and adolescents who are already experiencing mental health difficulties.[47] Despite social media providing a sense of community for some, a systematic review of more than two dozen studies found that some social media platforms show live depictions of self-harm acts like partial asphyxiation, leading to seizures, and cutting, leading to significant bleeding.[48] Further, these studies found that discussing or showing this content can normalize such behaviors, including through the formation of suicide pacts and posting of self-harm models for others to follow.

Social media may also perpetuate body dissatisfaction, disordered eating behaviors, social comparison, and low self-esteem, especially among adolescent girls.[49, 50, 51, 52] A synthesis of 20 studies demonstrated a significant relationship between social media use and body image concerns and eating disorders, with social comparison as a potential contributing factor.[41] Social comparison driven by social media is associated with body dissatisfaction, disordered eating, and depressive symptoms.[53, 54, 55, 56] When asked about the impact of social media on their body image, nearly half (46%) of adolescents aged 13–17 said social media makes them feel worse, 40% said it makes them feel neither better nor worse, and only 14% said it makes them feel better.[57]

Additionally, roughly two-thirds (64%) of adolescents are “often” or “sometimes” exposed to hate-based content.[58] Among adolescent girls of color, one-third or more report exposure to racist content or language on social media platforms

at least monthly.[24] In a review of 36 studies, a consistent relationship was found between cyberbullying via social media and depression among children and adolescents,[40] with adolescent females and sexual minority youth more likely to report experiencing incidents of cyberbullying.[59, 60] Nearly 75% of adolescents say social media sites are only doing a fair to poor job of addressing online harassment and cyberbullying.[61]

In addition, social media platforms can be sites for predatory behaviors and interactions with malicious actors who target children and adolescents (e.g., adults seeking to sexually exploit children, to financially extort them through the threat or actual distribution of intimate images, or to sell illicitly manufactured fentanyl).[62, 63, 64] Adolescent girls and transgender youth are disproportionately impacted by online harassment and abuse, which is associated with negative emotional impacts (e.g., feeling sad, anxious or worried).[65, 66] Nearly 6-in-10 adolescent girls say they've been contacted by a stranger on certain social media platforms in ways that make them feel uncomfortable.[24]

Potential Risk of Harm from Excessive and Problematic Use

Excessive and problematic use of social media can harm children and adolescents by disrupting important healthy behaviors. Social media platforms are often designed to maximize user engagement, which has the potential to encourage excessive use and behavioral dysregulation.[67, 68, 69, 70] Push notifications, autoplay, infinite scroll, quantifying and displaying popularity (i.e., 'likes'), and algorithms that leverage user data to serve content recommendations are some examples of these features that maximize engagement. According to one recent model, nearly a third (31%) of social media use may be attributable to self-control challenges magnified by habit formation.[71] Further, some researchers believe that social media exposure can overstimulate the reward center in the brain and, when the stimulation becomes excessive, can trigger pathways comparable to addiction.[68, 72] Small studies have shown that people with frequent and problematic social media use can experience changes in brain structure similar to changes seen in individuals with substance use or gambling addictions.[73, 74] In a nationally representative survey of girls aged 11–15, one-third or more say they feel "addicted" to a social media platform.[24] Over half of teenagers report that it would be hard to give

up social media.[2] Nearly 3-in-4 teenagers believe that technology companies manipulate users to spend more time on their devices.[68] In addition, according to a survey of 8th and 10th graders, the average time spent on social media is 3.5 hours per day, 1-in-4 spend 5+ hours per day and 1-in-7 spend 7+ hours per day on social media.[31]

Excessive and problematic social media use, such as compulsive or uncontrollable use, has been linked to sleep problems, attention problems, and feelings of exclusion among adolescents.[43, 75, 76, 77] Sleep is essential for the healthy development of adolescents. A systematic review of 42 studies on the effects of excessive social media use found a consistent relationship between social media use and poor sleep quality, reduced sleep duration, sleep difficulties, and depression among youth.[42] Poor sleep has been linked to altered neurological development in adolescent brains, depressive symptoms, and suicidal thoughts and behaviors.[78, 79, 80] On a typical weekday, nearly 1-in-3 adolescents report using screen media until midnight or later.[58] While screen media use encompasses various digital activities, social media applications are the most commonly used applications by adolescents.[58]

In a recent narrative review of multiple studies, problematic social media use has also been linked to both self-reported and diagnosed attention-deficit/hyperactivity disorder (ADHD) in adolescents, although more research is necessary to understand whether one causes the other.[81] A longitudinal prospective study of adolescents without ADHD symptoms at the beginning of the study found that, over a 2-year follow-up, high-frequency use of digital media, with social media as one of the most common activities, was associated with a modest yet statistically significant increased odds of developing ADHD symptoms (OR 1.10; 95% CI, 1.05-1.15).[82] Additionally, social media-induced fear of missing out, or "the pervasive apprehension that others might be having rewarding experiences from which one is absent,"[83] has been associated with depression, anxiety, and neuroticism.[84]

Nearly every teenager in America uses social media, and yet we do not have enough evidence to conclude that it is sufficiently safe for them. Our children have become unknowing participants in a decades-long experiment. It is critical that independent researchers and technology companies work together to rapidly advance our understanding of the impact of social media on children and adolescents. This section describes the known gaps and proposes additional areas for research that warrant urgent consideration.

Known Evidence Gaps

The relationship between social media and youth mental health is complex and potentially bidirectional.[19] There is broad concern among the scientific community that a lack of access to data and lack of transparency from technology companies have been barriers to understanding the full scope and scale of the impact of social media on mental health and well-being. Most prior research to date has been correlational, focused on young adults or adults, and generated a range of results.[85] Critical areas of research have been proposed to fill knowledge gaps and create evidence-based interventions, resources, and tools to support youth mental health.[86] Thus, there is an urgent need for additional research including on, but not limited to, the following questions:

- How do in-person vs. digital social interactions differ in terms of the impact on health, and what are the unique contributions of social media behavior to social connectedness, social isolation, and mental health symptoms?
- What are the potential pathways through which social media may cause harm to children's and adolescents' mental health and well-being? For example:
  - How does social comparison affect one's sense of life satisfaction and in-person relationships?
  - How does the use of social media, including specific designs and features, relate to dopamine pathways involved in motivation, reward, and addiction?
- What type of content, and at what frequency and intensity, generates the most harm? Through which modes of social media access (e.g., smartphone, computer) and design features? For which users and why?

- What are the beneficial effects of social media? For whom are the benefits greatest? In what ways, and under what circumstances?
- What individual-, community-, and societal-level factors may protect youth from the negative effects of social media?
- What types of strategies and approaches are effective in protecting the mental health and well-being of children and adolescents on social media (e.g., programs, policies, design features, interventions, norms)?
- How does social media use interact with a person's developmental stage for measuring risk of mental health impact?

It is critical that independent researchers and technology companies work together to rapidly advance our understanding of the impact of social media on children and adolescents.

Our children and adolescents don't have the luxury of waiting years until we know the full extent of social media's impact. Their childhoods and development are happening now. While social media use can have positive impacts for some children, the evidence noted throughout this Surgeon General's Advisory necessitates significant concern with the way it is currently designed, deployed, and utilized. Child and adolescent use of platforms designed for adults places them at high risk of "unsupervised, developmentally inappropriate, and potentially harmful" use according to the National Scientific Council on Adolescence.[87] At a moment when we are experiencing a national youth mental health crisis, now is the time to act swiftly and decisively to protect children and adolescents from risk of harm.

To date, the burden of protecting youth has fallen predominantly on children, adolescents, and their families. Parents face significant challenges in managing children and adolescents' use of social media applications, and youth are using social media at increasingly earlier ages.[4, 88] Nearly 70% of parents say parenting is now more difficult than it was 20 years ago, with technology and social media as the top two cited reasons.[89] While nearly all parents believe they have a responsibility to protect their children from inappropriate content online,[89] the entire burden of mitigating the risk of harm of social media cannot be placed on the shoulders of children and parents. Nearly 80% of parents believe technology companies have a responsibility to protect children from inappropriate content as well.[89]

We must provide children and their families with the information and tools to navigate the changing digital environment, but this burden to support our children must be further shared. There are actions technology companies can take to make their platforms safer for children and adolescents. There are actions researchers can take to develop the necessary research base to support further safeguards. And there is a role for local, state, and federal policy to implement protections for our children and adolescents.

The U.S. has a strong history of taking action in such circumstances. In the case of toys, transportation, and medications — among other sectors that have

widespread adoption and impact on children — the U.S. has often adopted a safety-first approach to mitigate the risk of harm to consumers. According to this principle, a basic threshold for safety must be met, and until safety is demonstrated with rigorous evidence and independent evaluation, protections are put in place to minimize the risk of harm from products, services, or goods. For example, the Consumer Product Safety Commission requires toy manufacturers to undergo third-party testing and be certified through a Children's Product Certificate as compliant with the federal toy safety standard for toys intended for use by children.[90] To reduce the risk of injury from motor vehicle accidents, the National Highway Traffic Safety Administration requires manufacturers to fit new motor vehicles with standard airbags and seat belts, among other safety features, and conduct crash tests to be compliant with the Federal Motor Vehicle Safety Standards.[91] Medications must demonstrate safety to the Food and Drug Administration before being made available and marketed for use.[92] Given the mounting evidence for the risk of harm to some children and adolescents from social media use, a safety-first approach should be applied in the context of social media products.

To better safeguard the mental health and well-being of children and adolescents, policymakers, technology companies, researchers, families, and young people must all engage in a proactive and multifaceted approach. Through the recommendations below, we can provide more resources and tools to children and families, we can gain a better understanding of the full impact of social media, and we can maximize the benefits and minimize the harms of social media platforms to create safer, healthier online environments for children.

We can maximize the benefits and minimize the harms of social media platforms to create safer, healthier online environments for children.

What Policymakers Can Do

Policymakers play an important role in addressing the complex and multifaceted issues related to social media use and in protecting youth from harm.

- **Strengthen protections to ensure greater safety for children interacting with all social media platforms,** in collaboration with governments, academic organizations, public health experts, and technology companies.
  - » **Develop age-appropriate health and safety standards** for technology platforms. Such standards may include designing technology that is appropriate and safe for a child's developmental stage; protecting children and adolescents from accessing harmful content (e.g., content that encourages eating disorders, violence, substance abuse, sexual exploitation, and suicide or discusses suicide means); limiting the use of features that attempt to maximize time, attention, and engagement; developing tools that protect activities that are essential for healthy development like sleep; and regularly assessing and mitigating risks to children and adolescents.
  - » **Require a higher standard of data privacy for children** to protect them from potential harms like exploitation and abuse. Six-in-ten adolescents say they think they have little or no control over the personal information that social media companies collect about them.[32]
  - » **Pursue policies that further limit access — in ways that minimize the risk of harm — to social media for all children,** including strengthening and enforcing age minimums.
- **Ensure technology companies share data relevant to the health impact of their platforms** with independent researchers and the public in a manner that is timely, sufficiently detailed, and protects privacy.
- **Support the development, implementation, and evaluation of digital and media literacy curricula in schools and within academic standards.** Digital and media literacy provides children and educators with digital skills to strengthen digital resilience, or the ability to recognize, manage, and recover from online risks (e.g., cyberbullying and other forms of online harassment and abuse, as well as excessive social media use).
- **Support increased funding for future research** on both the benefits and harms of social media use and other technology and digital media use for children, adolescents, and families.
- **Engage with international partners** working to protect children and adolescents against online harm to their health and safety.

What Technology Companies Can Do

Technology companies play a central role and have a fundamental responsibility in designing safe online environments and in preventing, minimizing, and addressing the risks associated with social media.

- **Conduct and facilitate transparent and independent assessments of the impact of social media products and services on children and adolescents.** Assume responsibility for the impact of products on different subgroups and ages of children and adolescents, regardless of the intent behind them.
  - » **Be transparent and share assessment findings and underlying data** with independent researchers and the public in a privacy protecting manner.
  - » **Assess the potential risks of online interactions and take active steps to prevent potential misuse**, reducing exposure to harms. When proactive responses fail, take immediate action to mitigate unintended negative effects.
  - » **Establish scientific advisory committees to inform approaches and policies** aimed at creating safe online environments for children. Scientific advisory committees should be comprised of independent experts and members of user subgroups, including youth.
- **Prioritize user health and safety in the design and development of social media products and services.**[93, 94, 95, 96] Prioritize and leverage expertise in developmental psychology and user mental health and well-being in product teams to minimize risks of harm to children and adolescents.
  - » **Ensure default settings for children are set to highest safety and privacy standards**. Provide easy-to-read and highly visible information about policies regarding use by children.
  - » **Adhere to and enforce age minimums** in ways that respect the privacy of youth users.
- **Design, develop, and evaluate platforms, products, and tools that foster safe and healthy online environments for youth,** keeping in mind the needs of girls, racial, ethnic, and sexual and gender minorities. The platform design and algorithms should prioritize health and safety as the first principle, seek to maximize the potential benefits, and avoid design features that attempt to maximize time, attention, and engagement.
- **Share data relevant to the health impact of platforms and strategies employed to ensure safety and well-being** with independent researchers and the public in a manner that is timely and protects privacy.
- **Create effective and timely systems and processes to adjudicate requests and complaints from young people, families, educators, and others** to address online abuse, harmful content and interactions, and other threats to children's health and safety. Social media platforms should take these complaints seriously, thoroughly investigate and consider them, and respond in a timely and transparent manner.

What Parents and Caregivers Can Do

The onus of mitigating the potential harms of social media should not be placed solely on the shoulders of parents and caregivers, but there are steps they can take to help protect and support children and adolescents against the risk of harm.

- **Create a family media plan.**[97] Agreed-upon expectations can help establish healthy technology boundaries at home – including social media use. A family media plan can promote open family discussion and rules about media use and include topics such as balancing screen/online time, content boundaries, and not disclosing personal information. For information on creating a family media plan, visit www.healthychildren.org/MediaUsePlan.

- **Create tech-free zones and encourage children to foster in-person friendships.**[98] Since electronics can be a potential distraction after bedtime and can interfere with sleep, consider restricting the use of phones, tablets, and computers for at least 1 hour before bedtime and through the night. Consider keeping family mealtimes and in-person gatherings device-free to build social bonds and engage in a two-way conversation. Help your child develop social skills and nurture his or her in-person relationships by encouraging unstructured and offline connections with others and making unplugged interactions a daily priority. See the American Academy of Pediatrics (AAP) guidelines for media use.

- **Model responsible social media behavior.** As children often learn behaviors and habits from what they see around them, try to model the behavior you want to see.[97, 99] Parents can set a good example of what responsible and healthy social media use looks like by limiting their own use, being mindful of social media habits (including when and how parents share information or content about their child), and modeling positive behavior on your social media accounts.

- **Teach kids about technology and empower them to be responsible online participants at the appropriate age.**[100] Discuss with children the benefits and risks of social media as well as the importance of respecting privacy and protecting personal information in age-appropriate ways. Have conversations with children about who they are connecting with, their privacy settings, their online experiences, and how they are spending their time online. Empower and encourage them to seek help should they need it. Learn more about the benefits and risks of social media use and get guidance from experts at AAP's Center of Excellence on Social Media and Youth Mental Health and from the American Psychological Association's Health Advisory on Social Media Use in Adolescence.

- **Report cyberbullying and online abuse and exploitation.** Talk to your child about their reporting options, and provide support, without judgment, if he or she tells or shows you that they (a) are being harassed through email, text message, online games, or social media or (b) have been contacted by an adult seeking private images or asking them to perform intimate or sexual acts. You or your child can report cyberbullying to the school and/or the online platform, or your local law enforcement.[101] Visit CyberTipline, Take it Down, or contact your local law enforcement to report any instances of online exploitation.

- **Work with other parents to help establish shared norms and practices and to support programs and policies around healthy social media use.** Such norms and practices among parents facilitate collective action and can make it easier to set and implement boundaries on social media use for children.

What Children and Adolescents Can Do

The burden of mitigating the potential harms of social media does not rest solely on the shoulders of children and adolescents, but there are measures they can take to navigate social media in a safe and healthy way.

- **Reach out for help.** If you or someone you know is being negatively affected by social media, reach out to a trusted friend or adult for help. For information from experts, visit AAP's Center of Excellence on Social Media and Youth Mental Health. If you or someone you know is experiencing a mental health crisis, contact the 988 Suicide and Crisis Lifeline by calling or texting 988 for immediate help.

- **Create boundaries to help balance online and offline activities.** Limit the use of phones, tablets, and computers for at least 1 hour before bedtime and through the night to enable sufficient and quality sleep. Keep mealtimes and in-person gatherings device-free to help build social bonds and engage in two-way conversations with others. Nurture your in-person relationships by connecting with others and making unplugged interactions a daily priority.

- **Develop protective strategies and healthy practices** such as tracking the amount of time you spend online, blocking unwanted contacts and content, learning about and using available privacy and safety settings, learning and utilizing digital media literacy skills to help tell the difference between fact and opinion, and ensuring you are connecting with peers in-person. See this Tip Sheet on Social Media Use and Mental Health for healthy social media use created for and by young people.

- **Be cautious about what you share.** Personal information about you has value. Be selective with what you post and share online and with whom, as it is often public and can be stored permanently. If you aren't sure if you should post something, it's usually best if you don't. Talk to a family member or trusted adult to see if you should.

- **Protect yourself and others.** Harassment that happens in email, text messaging, direct messaging, online games, or on social media is harmful and can be cyberbullying. It might involve trolling, rumors, or photos passed around for others to see – and it can leave people feeling angry, sad, ashamed, or hurt. If you or someone you know is the victim of cyberbullying or other forms of online harassment and abuse:

  - **Don't keep online harassment or abuse a secret.** Reach out to at least one person you trust, such as a close friend, family member, counselor, or teacher, who can give you the help and support you deserve. Visit stopbullying.gov for helpful tips on how to report cyberbullying. If you have experienced online harassment and abuse by a dating partner, contact an expert at Love is Respect for support or if your private images have been taken and shared online without your permission, visit Take it Down to help get them removed.
  - **Don't take part in online harassment or abuse.** Avoid forwarding or sharing messages or images and tell others to stop. Another way is to report offensive content to the site or network where you saw it.

What Researchers Can Do

Researchers play a critical role in helping to gain a better understanding of the full impact of social media on mental health and well-being and informing policy, best practices, and effective interventions.

- **Establish the impact of social media on youth mental health as a research priority and develop a shared research agenda.**[102] Research should include but not be limited to:
  - » **Rigorous evaluation of social media's impact** on youth mental health and well-being, including longitudinal and experimental studies. This could also include research on specific outcomes and clinical diagnoses (e.g., sleep duration and quality, attention, depression, anxiety, and body image), among specific populations (e.g., racial, ethnic, and sexual and gender minorities), and based on specific aspects of social media (e.g., designs, features, and algorithms).
  - » **Role of age, developmental stage, cohort processes, and the in-person environment** in influencing the onset and progression of poor mental health outcomes among social media users.
  - » **Benefits and risks associated** with specific social media designs, features, and content.
  - » **Long-term effects on adults** of social media use during childhood and adolescence.
- **Develop and establish standardized definitions and measures** for social media and mental health outcomes that are regularly evaluated and can be applied across basic research, population surveillance, intervention evaluation, and other contexts.
- **Evaluate best practices for healthy social media use** in collaboration with experts including healthcare providers, parents, and youth.[94, 103, 104]
- **Enhance research coordination and collaboration.** Example opportunities include developing an accessible evidence database and forming a consortium of researchers focused on examining the positive and negative effects of social media on mental health and well-being. Researchers should work with community partners to make research findings publicly accessible and digestible.

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National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Division of Adolescent and School Health (DASH)

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Substance Abuse and Mental Health Services Administration (SAMHSA)

Endnotes

1. The definition of social media has been highly debated over the past few decades. As a result, there isn't a single, widely-accepted scholarly definition of social media. (Aichner et al., 2021) The definition may vary from the cited research in this document based on the methods used in each study. In making conclusions and recommendations, this document regards social media as "internet-based channels that allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others." (Carr & Hayes, 2015) For the purposes of this product, we did not include studies specific to online gaming or e-sports. **Source:** Aichner, T., Grünfelder, M., Maurer, O., & Jegeni, D. (2021). Twenty-Five Years of Social Media: A Review of Social Media Applications and Definitions from 1994 to 2019. *Cyberpsychology, Behavior And Social Networking*, 24(4), 215–222. https://doi.org/10.1089/cyber.2020.0134 **Source:** Carr, C. T., & Hayes, R. A. (2015). Social Media: Defining, Developing, and Divining. *Atlantic Journal of Communication*, 23:1, 46-65. https://doi.org/10.1080/15456870.2015.972282

2. Vogels, E., Gelles-Watnick, R. & Massarat, N. (2022). Teens, Social Media and Technology 2022. Pew Research Center: Internet, Science & Tech. United States of America. Retrieved from https://www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/

3. The minimum required age set by social media platforms is informed by the Children's Online Privacy Protection Act that requires social media platforms to collect verifiable parental consent before collecting, storing, and sharing data from children under age 13. **Source:** Federal Trade Commission. (n.d.). Children's Online Privacy Protection Act ("COPPA"). Federal Trade Commission. Retrieved from https://www.ftc.gov/legal-library/browse/statutes/childrens-online-privacy-protection-act

4. Rideout, V., Peebles, A., Mann, S., & Robb, M. B. (2022). Common Sense Census: Media use by tweens and teens, 2021. San Francisco, CA: Common Sense. Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf

5. It is important to note that many factors can shape mental health, and a comprehensive approach, including prevention strategies, will be needed to support and protect the mental health of children and adolescents. **Source:** Office of the Surgeon General (OSG). (2021). Protecting Youth Mental Health: The U.S. Surgeon General's Advisory. US Department of Health and Human Services. Retrieved from https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-health-advisory.pdf

6. American Psychological Association. (2023). Health Advisory on Social Media Use in Adolescence. American Psychological Association. Retrieved from https://www.apa.org/topics/social-media-internet/health-advisory-adolescent-social-media-use.pdf

7. Beyens, I., Pouwels, J. L., van Driel, I. I., Keijsers, L., & Valkenburg, P. M. (2020). The effect of social media on well-being differs from adolescent to adolescent. *Scientific reports*, 10(1), 10763. https://doi.org/10.1038/s41598-020-67727-7

8. Hollis, C., Livingstone, S., & Sonuga-Barke, E. (2020). Editorial: The role of digital technology in children and young people's mental health - a triple-edged sword?. *Journal of child psychology and psychiatry, and allied disciplines*, 61(8), 837–841. https://doi.org/10.1111/jcpp.13302

9. Uhls, Y. T., Ellison, N. B., & Subrahmanyam, K. (2017). Benefits and Costs of Social Media in Adolescence. *Pediatrics*, 140(Suppl 2), S67–S70. https://doi.org/10.1542/peds.2016-1758E

10. Fuhrmann, D., Knoll, L. J., & Blakemore, S. J. (2015). Adolescence as a Sensitive Period of Brain Development. *Trends in cognitive sciences*, 19(10), 558–566. https://doi.org/10.1016/j.tics.2015.07.008

11. Blakemore, S. J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing?. *Annual review of psychology*, 65, 187–207. https://doi.org/10.1146/annurev-psych-010213-115202

12. Romer D. (2010). Adolescent risk taking, impulsivity, and brain development: implications for prevention. *Developmental psychobiology*, 52(3), 263–276. https://doi.org/10.1002/dev.20442

13. National Academies of Sciences, Engineering, and Medicine (NASEM). (2019). The Promise of Adolescence: Realizing Opportunity for All Youth. Washington, DC: The National Academies Press. https://doi.org/10.17226/25388

14. Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustün, T. B. (2007). Age of onset of mental disorders: a review of recent literature. *Current opinion in psychiatry*, 20(4), 359–364. https://doi.org/10.1097/YCO.0b013e32816ebc8c

15. Maza, M. T., Fox, K. A., Kwon, S. J., Flannery, J. E., Lindquist, K. A., Prinstein, M. J., & Telzer, E. H. (2023). Association of Habitual Checking Behaviors on Social Media With Longitudinal Functional Brain Development. *JAMA pediatrics*, 177(2), 160–167. https://doi.org/10.1001/jamapediatrics.2022.4924

16. Crone, E. A., & Konijn, E. A. (2018). Media use and brain development during adolescence. *Nature communications*, 9(1), 588. https://doi.org/10.1038/s41467-018-03126-x

17. Orben, A., Przybylski, A. K., Blakemore, S. J., & Kievit, R. A. (2022). Windows of developmental sensitivity to social media. *Nature communications*, 13(1), 1649. https://doi.org/10.1038/s41467-022-29296-3

18. Anderson, M. & Jiang, J. (2018). Teens' Social Media Habits and Experiences. Pew Research Center: Internet, Science & Tech. United States of America. Retrieved from https://www.pewresearch.org/internet/2018/11/28/teens-social-media-habits-and-experiences/

19. 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

20. According to the National Institutes of Health, sexual and gender minority (SGM) populations include, but are not limited to, individuals who identify as lesbian, gay, bisexual, asexual, transgender, Two-Spirit, queer, and/or intersex. Individuals with same-sex or -gender attractions or behaviors and those with a difference in sex development are also included. These populations also encompass those who do not self-identify with one of these terms but whose sexual orientation, gender identity or expression, or reproductive development is characterized by non-binary constructs of sexual orientation, gender, and/or sex. **Source:** U.S. Department of Health and Human Services. National Institutes of Health. (2022, December 8). Sex, gender, and Sexuality. National Institutes of Health. https://www.nih.gov/nih-style-guide/sex-gender-sexuality

21. Charmaraman, L., Hernandez, J., & Hodes, R. (2022). Marginalized and Understudied Populations Using Digital Media. In J. Nesi, E. Telzer, & M. Prinstein (Eds.), Handbook of Adolescent Digital Media Use and Mental Health (pp. 188-214). Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108976237.011

22. Ybarra, M. L., Mitchell, K. J., Palmer, N. A., & Reisner, S. L. (2015). Online social support as a buffer against online and offline peer and sexual victimization among U.S. LGBT and non-LGBT youth. *Child abuse & neglect*, 39, 123–136. https://doi.org/10.1016/j.chiabu.2014.08.006

23. Berger, M. N., Taba, M., Marino, J. L., Lim, M. S. C., & Skinner, S. R. (2022). Social Media Use and Health and Well-being of Lesbian, Gay, Bisexual, Transgender, and Queer Youth: Systematic Review. *Journal of medical Internet research*, 24(9), e38449. https://doi.org/10.2196/38449

24. Nesi, J., Mann, S. and Robb, M. B. (2023). Teens and mental health: How girls really feel about social media. San Francisco, CA: Common Sense. Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/how-girls-really-feel-about-social-media-researchreport_final_1.pdf

25. Vogels, E., & Gelles-Watnick, R. (2023). Teens and social media: Key findings from Pew Research Center surveys. Pew Research Center: Internet, Science & Tech. United States of America. Retrieved from https://www.pewresearch.org/short-reads/2023/04/24/teens-and-social-media-key-findings-from-pew-research-center-surveys/

26. Kauer, S. D., Mangan, C., & Sanci, L. (2014). Do online mental health services improve help-seeking for young people? A systematic review. *Journal of medical Internet research*, *16*(3), e66. https://doi.org/10.2196/jmir.3103

27. Rice, S. M., Goodall, J., Hetrick, S. E., Parker, A. G., Gilbertson, T., Amminger, G. P., Davey, C. G., McGorry, P. D., Gleeson, J., & Alvarez-Jimenez, M. (2014). Online and social networking interventions for the treatment of depression in young people: a systematic review. *Journal of medical Internet research*, 16(9), e206. https://doi.org/10.2196/jmir.3304

28. Ridout, B., & Campbell, A. (2018). The Use of Social Networking Sites in Mental Health Interventions for Young People: Systematic Review. *Journal of medical Internet research*, 20(12), e12244. https://doi.org/10.2196/12244

29. Kruzan, K. P., Williams, K. D. A., Meyerhoff, J., Yoo, D. W., O'Dwyer, L. C., De Choudhury, M., & Mohr, D. C. (2022). Social media-based interventions for adolescent and young adult mental health: A scoping review. *Internet interventions*, 30, 100578. https://doi.org/10.1016/j.invent.2022.100578

30. Riehm, K. E., Feder, K. A., Tormohlen, K. N., Crum, R. M., Young, A. S., Green, K. M., Pacek, L. R., La Flair, L. N., & Mojtabai, R. (2019). Associations Between Time Spent Using Social Media and Internalizing and Externalizing Problems Among US Youth. *JAMA psychiatry*, 76(12), 1266–1273. https://doi.org/10.1001/jamapsychiatry.2019.2325

31. Miech, R. A., Johnston, L. D., Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., and Patrick, M. E. (2022). Monitoring the Future: A Continuing Study of American Youth (8th- and 10th-Grade Surveys), 2021. Inter-university Consortium for Political and Social Research [distributor]. https://doi.org/10.3886/ICPSR38502.v1

32. Braghieri, L., Levy, R., & Makarin, A. (2022). Social Media and Mental Health. *American Economic Review*, 112(11), 3660-3693. https://pubs.aeaweb.org/doi/abs/10.1257/aer.20211218

33. Doucleff, M. (2023, April 25). The Truth About Teens, Social Media and the Mental Health Crisis. NPR. Retrieved May 2, 2023, from https://www.npr.org/sections/health-shots/2023/04/25/1171773181/social-media-teens-mental-health

34. Hunt, M. G., Marx, R., Lipson, C., & Young, J. (2018). No more FOMO: Limiting social media decreases loneliness and depression. *Journal of Social and Clinical Psychology, 37*(10), 751–768. https://doi.org/10.1521/jscp.2018.37.10.751

35. From a mean Beck Depression Inventory (BDI) of 23 at baseline to a mean BDI of 14.5 at Week 4.

36. Allcott, H., Braghieri, L., Eichmeyer, S., & Gentzkow, M. (2020). The Welfare Effects of Social Media. *American Economic Review*, 110(3), 629-76. DOI: 10.1257/aer.20190658

37. Abi-Jaoude, E., Naylor, K. T., & Pignatiello, A. (2020). Smartphones, social media use and youth mental health. *Canadian Medical Association journal*, 192(6), E136–E141. https://doi.org/10.1503/cmaj.190434

38. Orben, A., & Przybylski, A. K. (2020). Reply to: Underestimating digital media harm. *Nature human behaviour*, 4(4), 349–351. https://doi.org/10.1038/s41562-020-0840-y

39. Twenge, J. M., Haidt, J., Lozano, J., & Cummins, K. M. (2022). Specification curve analysis shows that social media use is linked to poor mental health, especially among girls. *Acta psychologica*, 224, 103512. https://doi.org/10.1016/j.actpsy.2022.103512

40. Hamm, M. P., Newton, A. S., Chisholm, A., Shulhan, J., Milne, A., Sundar, P., Ennis, H., Scott, S. D., & Hartling, L. (2015). Prevalence and Effect of Cyberbullying on Children and Young People: A Scoping Review of Social Media Studies. *JAMA pediatrics*, 169(8), 770–777. https://doi.org/10.1001/jamapediatrics.2015.0944

41. 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

42. Alonzo, R., Hussain, J., Stranges, S., & Anderson, K. K. (2021). Interplay between social media use, sleep quality, and mental health in youth: A systematic review. *Sleep medicine reviews*, 56, 101414. https://doi.org/10.1016/j.smrv.2020.101414

43. Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2019). Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study. *EClinicalMedicine*, 6, 59–68. https://doi.org/10.1016/j.eclinm.2018.12.005

44. Gelles-Watnick, R. (2022). Explicit Content, Time-wasting Are Key Social Media Worries For Parents Of U.S. Teens. Pew Research Center. United States of America. Retrieved from https://www.pewresearch.org/fact-tank/2022/12/15/explicit-content-time-wasting-are-key-social-media-worries-for-parents-of-u-s-teens/

45. Dyer C. (2022). Social media content contributed to teenager's death "in more than a minimal way," says coroner. *BMJ* (Clinical research ed.), 379, o2374. https://doi.org/10.1136/bmj.o2374

46. Carville, O. (2022, November 30). TikTok's Viral Challenges Keep Luring Young Kids to Their Deaths. Bloomberg. Retrieved from https://www.bloomberg.com/news/features/2022-11-30/is-tiktok-responsible-if-kids-die-doing-dangerous-viral-challenges

47. Sumner, S. A., Ferguson, B., Bason, B., Dink, J., Yard, E., Hertz, M., Hilkert, B., Holland, K., Mercado-Crespo, M., Tang, S., & Jones, C. M. (2021). Association of Online Risk Factors With Subsequent Youth Suicide-Related Behaviors in the US. *JAMA network open*, 4(9), e2125860. https://doi.org/10.1001/jamanetworkopen.2021.25860

48. Dyson, M. P., Hartling, L., Shulhan, J., Chisholm, A., Milne, A., Sundar, P., Scott, S. D., & Newton, A. S. (2016). A Systematic Review of Social Media Use to Discuss and View Deliberate Self-Harm Acts. *PloS one*, 11(5), e0155813. https://doi.org/10.1371/journal.pone.0155813

49. Lonergan, A. R., Bussey, K., Fardouly, J., Griffiths, S., Murray, S. B., Hay, P., Mond, J., Trompeter, N., & Mitchison, D. (2020). Protect me from my selfie: Examining the association between photo-based social media behaviors and self-reported eating disorders in adolescence. *The International journal of eating disorders*, 53(5), 485–496. https://doi.org/10.1002/eat.23256

50. Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, behavior and social networking*, 17(4), 199–206. https://doi.org/10.1089/cyber.2013.0305

51. Thai, H., Davis, C. G., Mahboob, W., Perry, S., Adams, A., & Goldfield, G. S. (2023). Reducing Social Media Use Improves Appearance and Weight Esteem in Youth With Emotional Distress. *Psychology of Popular Media*. 10.1037/ppm0000460.

52. 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

53. Nesi, J., & Prinstein, M. J. (2015). Using Social Media for Social Comparison and Feedback-Seeking: Gender and Popularity Moderate Associations with Depressive Symptoms. *Journal of abnormal child psychology*, 43(8), 1427–1438. https://doi.org/10.1007/s10802-015-0020-0

54. 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

55. Kleemans, M., Daalmans, S., Carbaat, I., & Anschütz, D. (2018). Picture Perfect: The Direct Effect Of Manipulated Instagram Photos On Body Image In Adolescent Girls. *Media Psychology*, 21(1), 93–110. https://doi.org/10.1080/15213269.2016.1257392

56. Mabe, A. G., Forney, K. J., & Keel, P. K. (2014). Do You "Like" My Photo? Facebook Use Maintains Eating Disorder Risk. *The International journal of eating disorders*, 47(5), 516–523. https://doi.org/10.1002/eat.22254

57. Bickham, D.S., Hunt, E., Bediou, B., & Rich, M. (2022). Adolescent Media Use: Attitudes, Effects, and Online Experiences. Boston, MA: Boston Children's Hospital Digital Wellness Lab. Retrieved from https://digitalwellnesslab.org/wp-content/uploads/Pulse-Survey_Adolescent-Attitudes-Effects-and-Experiences.pdf

58. Rideout, V., & Robb, M. B. (2018). Social media, social life: Teens reveal their experiences. San Francisco, CA: Common Sense Media. Retrieved from https://www.commonsensemedia.org/sites/default/files/research/report/2018-social-media-social-life-executive-summary-web.pdf

59. Alhajji, M., Bass, S., & Dai, T. (2019). Cyberbullying, Mental Health, and Violence in Adolescents and Associations With Sex and Race: Data From the 2015 Youth Risk Behavior Survey. *Global pediatric health*, 6, 2333794X19868887. https://doi.org/10.1177/2333794X19868887

60. Rice, E., Petering, R., Rhoades, H., Winetrobe, H., Goldbach, J., Plant, A., Montoya, J., & Kordic, T. (2015). Cyberbullying perpetration and victimization among middle-school students. *American journal of public health*, 105(3), e66–e72. https://doi.org/10.2105/AJPH.2014.302393

61. Vogels, E. (2022). Teens and Cyberbullying 2022. Pew Research Center: Internet, Science & Tech. United States of America. Retrieved from https://www.pewresearch.org/internet/2022/12/15/teens-and-cyberbullying-2022/

62. Wolak, J., Finkelhor, D., Walsh, W., & Treitman, L. (2018). Sextortion of Minors: Characteristics and Dynamics. *The Journal of adolescent health,* 62(1), 72–79. https://doi.org/10.1016/j.jadohealth.2017.08.014

63. Federal Bureau of Investigations. (2022, December 19). FBI and Partners Issue National Public Safety Alert on Financial Sextortion Schemes. FBI. Retrieved from https://www.fbi.gov/news/press-releases/fbi-and-partners-issue-national-public-safety-alert-on-financial-sextortion-schemes

64. U.S. Drug Enforcement Administration. (2021, July 23). DEA Washington warns of deadly counterfeit drugs on social media. DEA. Retrieved from https://www.dea.gov/stories/2021/2021-07/2021-07-23/counterfeit-drugs-social-media

65. Finkelhor, D., Turner, H.A., & Colburn, D. (2023). Which dynamics make online child sexual abuse and cyberstalking more emotionally impactful: Perpetrator identity and images? *Child Abuse & Neglect*, 137, 106020. https://doi.org/10.1016/j.chiabu.2023.106020

66. Finkelhor, D., Turner, H., & Colburn, D. (2022). Prevalence of Online Sexual Offenses Against Children in the US. *JAMA network open*, 5(10), e2234471. https://doi.org/10.1001/jamanetworkopen.2022.34471

67. 5Rights Foundation. (2021). Pathways: How Digital Design Puts Children At Risk. Retrieved from https://5rightsfoundation.com/uploads/Pathways-how-digital-design-puts-children-at-risk.pdf

68. 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

69. Griffiths, M.D. (2018). Adolescent social networking: How do social media operators facilitate habitual use? *Education and Health*, 36(3), 66-69. Retrieved from https://sheu.org.uk/sheux/EH/eh363mdg.pdf

70. 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.ypmed.2020.106270

71. Allcott, H., Gentzkow, M., & Song, L. (2022). Digital Addiction. *American Economic Review*, 112 (7): 2424-63. https://doi.org/10.1257/aer.20210867

72. Andreassen, C. S. (2015). Online Social Network Site Addiction: A Comprehensive Review. *Current Addiction Reports*, 2, 175–184. https://doi.org/10.1007/s40429-015-0056-9

73. He, Q., Turel, O., & Bechara, A. (2017). Brain anatomy alterations associated with Social Networking Site (SNS) addiction. *Scientific reports*, 7, 45064. https://doi.org/10.1038/srep45064

74. Montag, C., Markowetz, A., Blaszkiewicz, K., Andone, I., Lachmann, B., Sariyska, R., Trendafilov, B., Eibes, M., Kolb, J., Reuter, M., Weber, B., & Markett, S. (2017). Facebook Usage On Smartphones And Gray Matter Volume Of The Nucleus Accumbens. *Behavioural Brain Research*, 329, 221–228. https://doi.org/10.1016/j.bbr.2017.04.035

75. Shannon, H., Bush, K., Villeneuve, P. J., Hellemans, K. G., & Guimond, S. (2022). Problematic Social Media Use in Adolescents and Young Adults: Systematic Review and Meta-analysis. *JMIR mental health*, 9(4), e33450. https://doi.org/10.2196/33450

76. Boer, M., Stevens, G., Finkenauer, C., & van den Eijnden, R. (2020). Attention deficit hyperactivity disorder-symptoms, social media use intensity, and social media use problems in adolescents: Investigating directionality. *Child Development*, 91(4), e853-e865. https://doi. org/10.1111/cdev.13334

77. Franchina, V., Vanden Abeele, M., van Rooij, A. J., Lo Coco, G., & De Marez, L. (2018). Fear of Missing Out as a Predictor of Problematic Social Media Use and Phubbing Behavior among Flemish Adolescents. *International Journal Of Environmental Research And Public Health*, 15(10), 2319. https://doi.org/10.3390/ijerph15102319

78. Telzer, E. H., Goldenberg, D., Fuligni, A. J., Lieberman, M. D., & Gálvan, A. (2015). Sleep variability in adolescence is associated with altered brain development. *Developmental cognitive neuroscience*, 14, 16–22. https://doi.org/10.1016/j.dcn.2015.05.007

79. Liu, R. T., Steele, S. J., Hamilton, J. L., Do, Q. B. P., Furbish, K., Burke, T. A., Martinez, A. P., & Gerlus, N. (2020). Sleep and suicide: A systematic review and meta-analysis of longitudinal studies. *Clinical psychology review*, 81, 101895. https://doi.org/10.1016/j.cpr.2020.101895

80. Shochat, T., Cohen-Zion, M., & Tzischinsky, O. (2014). Functional consequences of inadequate sleep in adolescents: a systematic review. *Sleep medicine reviews*, 18(1), 75–87. https://doi.org/10.1016/j.smrv.2013.03.005

81. Dekkers, T. J., & van Hoorn, J. (2022). Understanding Problematic Social Media Use in Adolescents with Attention-Deficit/Hyperactivity Disorder (ADHD): A Narrative Review and Clinical Recommendations. *Brain Sciences*, 12(12), 1625. https://doi.org/10.3390/brainsci12121625

82. Ra, C. K., Cho, J., Stone, M. D., De La Cerda, J., Goldenson, N. I., Moroney, E., Tung, I., Lee, S. S., & Leventhal, A. M. (2018). Association of Digital Media Use With Subsequent Symptoms of Attention-Deficit/Hyperactivity Disorder Among Adolescents. *JAMA*, 320(3), 255–263. https://doi.org/10.1001/jama.2018.8931

83. 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*; 29:1841–1848.

84. Fioravanti, G., Casale, S., Benucci, S.B., Prostamo, A., Falone, A., Ricca, V., & Rotella, F. (2021). Fear of missing out and social networking sites use and abuse: A meta-analysis. *Computers in Human Behavior*, 122, 106839. https://doi.org/10.1016/j.chb.2021.106839

85. Odgers, C. L., & Jensen, M. R. (2020). Annual Research Review: Adolescent mental health in the digital age: facts, fears, and future directions. *Journal of Child Psychology and Psychiatry*, and Allied Disciplines, 61(3), 336–348. https://doi.org/10.1111/jcpp.13190

86. Office of the Surgeon General (OSG). (2021). Protecting Youth Mental Health: The U.S. Surgeon General's Advisory. U.S. Department of Health and Human Services. Retrieved from https://www.hhs.gov/sites/default/files/surgeon-general-youth-mental-health-advisory.pdf

87. Odgers, C.L., Allen, N.B., Pfeifer, J.H., Dahl, R.E., Nesi, J., Schueller, S.M., Williams, J. L., & the National Scientific Council on Adolescence (2022). Engaging, safe, and evidence-based: What science tells us about how to promote positive development and decrease risk in online spaces, Council Report No 2. doi: 10.31234/osf.io/rvn8q

88. Clark, S. J., Schultz, S. L., Gebremariam, A., Singer, D. C., & Freed, G. L. (2021). Sharing too soon? Children and social media apps. C.S. Mott Children's Hospital National Poll on Children's Health, University of Michigan, 39(4). Retrieved from https://mottpoll.org/sites/default/files/documents/101821_SocialMedia.pdf

89. Auxier, B., Anderson, M., Perrin, A., & Turner, E. (2020). Parenting Children in the Age of Screens. Pew Research Center: Internet, Science & Tech. Retrieved from https://www.pewresearch.org/internet/2020/07/28/parenting-children-in-the-age-of-screens/

90. U.S. Consumer Product Safety Commission. (n.d.). Toy Safety Business Guidance & Small Entity Compliance Guide. U.S. Consumer Product Safety Commission. Retrieved from https://www.cpsc.gov/Business--Manufacturing/Business-Education/Toy-Safety-Business-Guidance-and-Small-Entity-Compliance-Guide

91. Unites States Department of Transportation. (n.d.). National Highway Traffic Safety Administration. Retrieved from https://www.nhtsa.gov/

92. U.S. Food and Drug Administration. (n.d.). Center for Drug Evaluation and Research. U.S. Food and Drug Administration. Retrieved from https://www.fda.gov/drugs

93. Australian Government, eSafety Commissioner. (nd). Safety by Design. Retrieved from https://www.esafety.gov.au/industry/safety-by-design

94. Information Commissioner's Office. (nd). Introduction To The Age Appropriate Design Code. Retrieved from https://ico.org.uk/for-organisations/childrens-code-hub/

95. Perrino, J. (2022, July 27). Using "Safety By Design" To Address Online Harms. Brookings Institute. https://www.brookings.edu/techstream/using-safety-by-design-to-address-online-harms/

96. Lenhart, A., & Owens, K. (2021). The Unseen Teen: The Challenges of Building Healthy Tech for Young People. Data & Society. Retrieved from https://datasociety.net/library/the-unseen-teen/

97. American Academy of Pediatrics (AAP). (2018, October 8). Kids & Tech: Tips for parents in the Digital age. HealthyChildren.org. Retrieved from https://www.healthychildren.org/English/family-life/Media/Pages/Tips-for-Parents-Digital-Age.aspx

98. Morgan Stanley Alliance For Children's Mental Health & Child Mind Institute. (2022, May). How to set limits on screen time and internet use. Retrieved from https://www.morganstanley.com/assets/pdfs/setting-limits-on-screen-time-tip-sheet.pdf

99. Ehmke, R. (2023, March 13). How using social media affects teenagers. Child Mind Institute. Retrieved from https://childmind.org/article/how-using-social-media-affects-teenagers/

100. American Psychological Association. (2019, December 12). Digital Guidelines: Promoting healthy technology use for children. American Psychological Association. Retrieved from https://www.apa.org/topics/social-media-internet/technology-use-children

101. US Department of Health and Human Services, Assistant Secretary for Public Affairs (ASPA). (2021, November 10). Prevent cyberbullying. StopBullying.gov. Retrieved from https://www.stopbullying.gov/cyberbullying/prevention https://www.stopbullying.gov/cyberbullying/how-to-report

102. National Academies of Sciences, Engineering, and Medicine (NASEM). (n.d.). Assessment of the Impact of Social Media on the Health and Wellbeing of Adolescents and Children. Retrieved from https://www.nationalacademies.org/our-work/assessment-of-the-impact-of-social-media-on-the-health-and-wellbeing-of-adolescents-and-children

103. American Academy of Pediatrics. (2023, February 7). Center of Excellence on Social Media and Youth Mental Health. Retrieved from https://www.aap.org/en/patient-care/media-and-children/center-of-excellence-on-social-media-and-youth-mental-health/#:~:text=What%20We%20Do,protect%20youth%20mental%20health%20online

104. American Academy of Pediatrics. (2017). *Bright Futures Guidelines for Health Supervision of Infants, Children, and Adolescents* (4th ed., pp. 229-234). American Academy of Pediatrics. https://downloads.aap.org/AAP/PDF/Bright%20Futures/BF4_HealthySocialMedia.pdf