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Technology use: Early years to transition years

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Introduction

Technology plays a significant role in the lives of children and young people, shaping how they learn, communicate, and access entertainment. The rise in technology use since the smartphone was introduced in 2007 has sparked controversy about whether technology is good or bad, and how it affects development and well-being (Twenge, 2020).

The purpose of this evidence brief is to increase our understanding of technology use across different developmental stages. At the Knowledge Institute on Child and Youth Mental Health and Addictions (the Knowledge Institute), we focus on the following stages: the early years (birth to 6 years old); middle years (7 to 12); teen years (13 to 18); and transition years (19 to 25). This resource describes the advantages and cautions that come with technology use, including problematic technology use (PTU). It is important to recognize the unique ways children and young people (and sometimes their caregivers) use and experience technology during each developmental stage. Understanding PTU across all stages will better prepare service providers to support children, teens, and young adults to deal with challenges from their experiences with technology.

For each stage, this resource provides information on:

- Characteristics of technology use.
- Potential effects of use.
- Signs of PTU.
- Recommendations for building resilience, supporting those experiencing PTU, and implementing intervention approaches.

This evidence brief is designed for leaders and service providers in the child and youth mental health, substance use health, and addictions sector. However, its content may also be of interest to others seeking to broaden their knowledge about technology use.

What is problematic technology use (PTU)?

Technology use:
The use of various devices and digital content, such as computers, tablets, smartphones, the internet, social media, gaming, and online gambling (Sampasa-Kanyinga et al., 2022).

Problematic technology use:
Using technology in a way that leads to negative consequences and impaired functioning in multiple areas of life such as relationships, school, work, and daily living (e.g., sleeping, eating, hygiene).

The term "technology use" encompasses a range of devices and digital content, such as computers, tablets, smartphones, the internet, social media, gaming, and online gambling (The Centre for Addiction and Mental Health [CAMH], n.d.-a.; Dienlin & Johannes, 2020; Sampasa-Kanyinga et al., 2022). Technology can be enjoyable and beneficial (Canadian Pediatric Society, 2019; Coyne et al., 2013; Haddock et al., 2022; Heller et al., 2021; Ponti, 2023). However, technology use can become problematic depending on the person, their relationship with technology, and other internal and external factors.

PTU refers to using technology in a way that leads to negative consequences (CAMH, n.d.-a.; Domoff et al., 2020; Knowledge Institute on Child and Youth Mental Health and Addictions [Knowledge Institute], 2023a; Mutschler & Aubrey, 2023). Problematic use of technology is differentiated from general use by a young person's impairment in functioning in multiple areas of life, such as relationships with family and peers, school, work, and daily living (e.g., sleeping, eating, hygiene; CAMH, n.d.-a.; Domoff et al., 2020; Mutschler & Aubrey, 2023).

Currently, PTU is not recognized as a formal diagnosis by the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) or by the International Classification of Diseases, 11th Revision (ICD-11; CAMH, n.d.-a.; Sampasa-Kanyinga et al., 2022). However, both classification systems do acknowledge certain behavioural addictions related to technology use. For example, gambling disorder is listed as a diagnosable condition, with the DSM-5 criteria closely mirroring those of substance use disorder. The ICD-11 also recognizes internet gaming disorder, while the DSM-5 lists it as a condition warranting further research. There is an ongoing controversy in the literature about whether PTU warrants a formal diagnosis like gambling disorder or internet gaming disorder (Griffiths et al., 2022). Nonetheless, PTU among children and young people has become a growing concern for service providers, young people, and families across Ontario (Boak et al., 2022; Knowledge Institute, 2023a; Sampasa-Kanyinga et al., 2022).

Many broad terms are used to describe PTU in the literature. These include "technology addiction," "excessive technology use," and "problematic digital media use," as well as terms for more specific aspects of technology use, such as "social media addiction" or "problematic internet use" (CAMH, n.d.-a; Prinstein et al., 2020; Sampasa-Kanyinga et al., 2022). The Knowledge Institute uses the term "problematic technology use/ PTU" because it includes all forms of technology. The term PTU recognizes those who may be experiencing challenges with their technology use without necessarily meeting the clinical criteria for behavioural addiction.

Signs of PTU

Screen time is often highlighted when looking for signs of PTU. Although it can be a helpful metric, relying solely on measuring the amount of screen time overlooks the nuanced nature of technology use, including how, why, when, and where it is being used (Prinstein et al., 2020). Understanding our relationship with technology is crucial to identifying whether it is problematic, as PTU can arise regardless of how much time we spend using screens (Mutschler & Aubrey, 2023). Technology use is inevitable, and so moving beyond a single measure of usage is important. Adopting a more nuanced approach to understanding technology use helps us to acknowledge technology for both its positive and negative aspects. A multifaceted view of usage offers insight into how children and young people (and their caregivers) uniquely interact with the digital world, which can ultimately help us identify and mitigate risk factors for PTU early and with care.

Experiencing challenges with technology use does not necessarily mean that use is problematic. Nevertheless, technology use and PTU can be related to significant mental health outcomes (Knowledge Institute, 2025; Twenge & Campbell, 2019).

Many behavioural and process addictions share a common set of signs and symptoms. For example, the criteria for gambling disorder and internet gaming disorder provide a starting point for identifying the general signs that technology use is becoming problematic. These include (Domoff et al., 2020):

Preoccupation: Constantly thinking about using technology.

Tolerance: Needing to spend more time using technology to achieve satisfaction.

Lack of control: Inability to limit technology use despite a desire to do so.

Withdrawal: Experiencing negative emotions such as irritability and anxiety when unable to use technology.

Deception: Lying about the extent or frequency of technology use.

Escape: Using technology to avoid or relieve negative emotions.

Loss of interest in other activities: Preferring technology over other activities that are usually enjoyable.

Psychosocial consequences: Experiencing social, academic, or occupational problems due to technology use.

Continuous technology use despite consequences: Continuing to use technology even when it leads to negative outcomes.

Factors affecting technology use

Different factors influence how children and young people use, interact with, and rely on technology, including:

- Personal characteristics (pre-existing mental health concerns, developmental delays, various abilities, gender).
- Behavioural patterns (frequency and time of use, active versus passive use).
- Environmental factors (socioeconomic status, cultural context, family dynamics).

These factors can interact and affect relationships with technology (Domoff et al., 2020; Knowledge Institute, 2025). Insights on these factors can help service providers offer appropriate support, suggest feasible recommendations for technology use, and meet children, young people, and caregivers where they are, in a way that is responsive to their linguistic, cultural, and accessibility needs (Heller, 2021; Ponti, 2023).

Technology use by the numbers

- Only 24.7% of children younger than 2 years and 35.6% of children aged 2 to 5 years meet screen time guidelines (McArthur et al., 2022).
- A survey of parents living in Canada that examined technology use within families found that 45% of those with children aged 5 to 9 and 10 to 13 reported that screen time was a source of conflict between them and their children (Brisson-Boivin, 2018).
- One in six (17.8%) of Ontario high school students report signs of moderate-to-serious problems with technology use (Boak et al., 2022).
- About one-quarter (23%) of Ontario students in grades 7 to 12 report spending five hours or more a day on social media, and about 9% of students report symptoms of problematic social media use, as measured by the *Social Media Disorder Scale* (Boak & Hamilton, 2024).
- About 8% of Ontario students in grades 7 to 12 report participating in online gambling in the past year (Boak & Hamilton, 2024).
- About 18% of Ontario students in grades 7 to 12 report symptoms of a video gaming problem, as measured by the *Problem Video Game Playing Scale* (Boak & Hamilton, 2024).

Impacts of the COVID-19 pandemic

Technology became crucial during the COVID-19 pandemic, as measures for physical distancing shifted educational, social, and recreational activities to screens. During that time, children and young people adapted to online learning. Staying connected with friends and family depended largely on virtual platforms like video calls and social media. Recreational activities involved more technology use, such as watching videos and gaming (Mutschler & Aubrey, 2023; Pinder & Brown, 2021).

During the pandemic, technology provided numerous benefits across each developmental stage. For example:

- Young children in the early years benefited from virtual interactions with friends and family (Farah et al., 2021).
- Young people in the middle, teen, and transition years used technology to support online learning (Eales et al., 2021).
- Those in the teen and transition years used technology to help maintain peer relationships and social connections (Drouin et al., 2020, Knowledge Institute, 2024a).

Before the pandemic, screen use was already prevalent and often exceeded recommended limits. However, screen use during the pandemic increased significantly due to the need for technology. Despite its benefits, concerns arose regarding excessive screen time, reduced face-to-face interactions, and the effect on cognitive, social, and emotional development across each developmental stage.

Although physical distancing measures have ended, some changes, such as online learning and using technology to socialize, have persisted. This has served to integrate technology more deeply into daily life and further emphasize the advantages and cautions of technology use (Mutschler & Aubrey, 2023). This shift highlights the importance of adopting a harm reduction approach to manage technology use and establish healthy boundaries in our increasingly digital world.

Harm reduction:
An approach aimed at mitigating the adverse effects of substance use or behavioural addictions without necessitating complete cessation, can empower individuals to minimize harms and lead safer, healthier lives. This approach is also applicable to PTU (Knowledge Institute, 2023a, b).

Throughout this resource we discuss some cautions related to technology use and harmful online content. For more information about digital harms and digital resilience, see our resource, Young people in the digital era: Understanding risk factors and promoting well-being.

Technology use across development

The literature on technology use across stages of childhood and adolescence is extensive and nuanced. The characteristics of technology use, its advantages and pitfalls, and recommendations for support when technology use becomes a concern, differ across ages and stages. They also differ across types of media and devices, such as social media, gaming, and online gambling.

Conversations about technology often focus on adult perspectives, overlooking the active role of children and young people in the digital world and their experiences of it. Recognizing children's and young people's voices and perspectives allows for a more effective approach to addressing the challenges and opportunities that technology presents, empowering families and young people to make informed decisions about technology use (Dienlin & Johannes, 2020).

Examining technology use through the lens of child and youth development recognizes that children and young people encompass a range of ages and stages, each with unique cognitive, emotional, and social needs. When supporting caregivers, children, and young people in navigating technology use, there are important considerations for each developmental stage. The context of technology use, types of devices, and applications used – and the positive and negative effects – can vary depending on the age and stage of development. For example, for the harmful effects of excessive screen time on cognitive development in the early years, recommendations are tailored toward caregivers. On the other hand, young people in the teen and transition years tend to engage more in social media use, and recommendations are more specifically focused on helping to reduce potential harms of using social media.

Considering technology use in the context of development enables us to acknowledge and address the specific needs, vulnerabilities, and opportunities of children and young people across all stages. Taking this approach recognizes that as children grow, they gain greater independence and decision-making power in their use of technology. Offering age-appropriate guidance and support that aligns with their evolving needs encourages responsible and informed choices regarding technology use, and helps maximize benefits while minimizing potential harms.

The advantages and cautions of technology use listed in each developmental stage below are the ones that are most strongly supported by research and are not an exhaustive list. Additionally, there is overlap between the characteristics, advantages, and cautions of technology use across developmental stages, but those mentioned in each section are the most relevant to the given stage.

Early years

The early years are defined as the period between birth to age 6 (Clinton et al., 2014). Early childhood is a critical period for developing cognitive, social, emotional, and motor skills (Garcia & Dias de Carvalho, 2022). During this time, the brain is highly adaptable to the environment and forms neural connections at a rapid pace (Garcia & Dias de Carvalho, 2022; Clinton et al., 2014). Children's environments and experiences, including caregiver relationships, stimulation, nutrition, and safe housing, shape how the brain develops (Clinton et al., 2014). Environment is critical, as these environmental factors and genetics interact to lay the foundation for a child's overall development.

Characteristics of technology use

For children in the early years, the term "screen time" refers to time spent with any screens, such as television, smartphones, tablets, and video games. Caregivers control screens in this stage, making children's exposure to technology more modifiable (Ponti, 2023). Technology has become integrated into families' daily routines, so its use with young children goes beyond entertainment. Screens can act as tools for rewarding good behaviour, distraction, supplements for education and learning, or helping regulate behaviour, and have become part of bedtime routines (Heller, 2021).

Advantages and cautions

Advantages

- High-quality screen media that is age-appropriate and educational can serve as an additional pathway to early language and literacy when used interactively and co-viewed with an adult (Heller et al., 2021; Ponti, 2023).
- Age-appropriate and educational screen media and activities that are co-viewed with an adult can create opportunities to discuss emotions and help children learn socio-emotional skills such as empathy and respect (Heller et al., 2021; Ponti, 2023).
- When used appropriately, screens can help distract a child who is distressed or help make a long wait easier (Heller, 2021; Ponti, 2023).
- Active video games and applications can encourage and complement physical activity (Ponti, 2023).

Cautions

- Prolonged screen exposure, including high exposure to background TV, can negatively affect language development by decreasing opportunities (a) to practice language skills, and (b) for caregiver-child interactions crucial for language development (Heller et al., 2021; Li et al., 2020; Madigan et al., 2020; Ponti, 2023).
- Technology use can displace face-to-face interactions with caregivers and lead to missed opportunities for children to learn and practice social skills (Heller et al., 2021; Ponti, 2023).
- Caregivers' technology use can also disrupt interactions with their children, known as "technoference", and has been linked to externalizing behaviours (McDaniel & Radesky, 2018; Ponti, 2023). High amounts of screen time for children can also lead to greater externalizing behaviours, emotional reactivity, and lower self-regulation (Heller, 2021; Ponti, 2023).
- Regularly using technology as a reward or distraction, or to calm down, can lead to a reliance on screens for emotional regulation and hinder the development of self-regulation skills and delay of gratification. An example of this is frequently providing a child with a smartphone when they are upset to help calm them down (Domoff et al., 2020; Ponti, 2023).
- A high volume of screen time, especially in the evening, may lead to difficulties with sleep, such as less sleep overall, more daytime napping, delayed sleep onset, greater sleep resistance, and more nighttime awakenings (Heller et al., 2021; Li et al., 2020; Ponti, 2023).

It is important to remember that young children learn best and thrive when interacting face-to-face with adults and through off-screen play time (Cheng, 2014; Heller et al., 2021; Ponti, 2023). This underlines the need for a balanced approach to technology use for both children and caregivers, ensuring that it complements, rather than replaces, these crucial face-to-face interactions.

Signs of PTU (Ponti, 2023)

- Difficulties with sleep, including decreased time spent sleeping or poorer sleep quality.
- Continually asking for technology and becoming upset if the request is denied.

Recommendations

Early childhood can be a critical time to begin conversations about screen use and for caregivers to implement strategies to prevent problematic habits from developing (McArthur et al., 2022; Ponti, 2023). Creating healthy routines with screens is easier if started early, rather than setting limits later (Ponti, 2023).

Service providers can encourage caregivers to avoid harmful habits while still using technology for its benefits (Heller, 2021; Ponti, 2023). The Canadian Pediatric Society (2019) recommends that service providers guide caregivers using the "4M's": minimizing, mitigating, mindfully using, and modelling healthy use of technology.

- **Minimize screen time**. Screen time is not recommended for children under the age of 2, except for video chatting with adults. Routine screen time should be limited to one hour or less per day for children aged 2 to 5. Avoid screens at least one hour before bedtime.
- **Mitigate the risks associated with screen time**. Be present and engaged when screens are used, and co-view with children when possible. Be aware of content and prioritize educational, age-appropriate, and interactive use. Encourage technology for creative activities rather than passively viewing content.
- **Be mindful of screen time**. Establish a plan for when, how, and where screens are allowed, and prioritize shared family technology use over individual use.
- **Model healthy screen use**. Encourage and participate in non-screen related activities such as reading, playing outdoors, or doing crafts. Turn off devices during family time, both at home and away from home, and turn off screens when not in use to avoid background TV. Caregivers should minimize their own screen use around their children.

Resources for service providers

- A clinician's guide to counselling parents of young children provides more information on how to engage in conversations with caregivers about screen use.

Middle years

The middle years refer to children 7 to 12 years old (Knowledge Institute, 2023c). It is a stage of development where children's brains, bodies, and social and inner worlds undergo rapid growth. A child's experiences directly influence brain functioning, as the brain quickly adapts and changes in response to experiences. The middle years phase also marks the onset of puberty for some children, bringing hormonal, physical, and behavioural changes. Socially and emotionally, these years are crucial as children begin to emphasize peer relationships, especially in school and after-school programs, clubs, sports, and other peer-related activities (Walker, 2022). Developing self-identity and self-esteem are also key aspects of this stage (Knowledge Institute, 2023c; Walker, 2022).

The middle years are a window during which children are vulnerable to risk factors (family challenges, negative peer relationships, economic instability) but also when protective factors can buffer children from adverse outcomes and help build resilience. Compared to the teen years, children in this age group are more receptive to the involvement of caregivers and other supportive adults. Caregivers demonstrating healthy behaviours can help foster positive outcomes in children during these years (Knowledge Institute, 2023c).

Characteristics of technology use

Children in the middle years begin establishing their relationship with technology (Domoff et al., 2020). In the early years, screen use mainly encompasses watching television or using smartphones and tablets. In the middle years, children begin using various devices and applications for recreational purposes and social interaction due to their stronger peer relationships and time spent in school and extracurricular activities.

For example, in addition to watching television, social media and video games become more popular at this stage (Canadian Paediatric Society, 2019; Qi et al., 2023; Walker, 2022). This is despite age restrictions of 13 years old on many social media platforms (Facebook, n.d; Federal Trade Commission, 1998; Instagram, n.d.; Snapchat, 2024; TikTok, 2024).

Pressure to conform to peer norms and engage in social comparison begins in childhood, including owning the latest devices or engaging on social media (Domoff et al., 2020). For example, children in this age group may request and receive their first smartphone (Walker, 2022). In addition to using technology during their leisure time, children are increasingly required to use it at school for educational purposes (Canadian Paediatric Society, 2019; Walker, 2022).

Throughout this period, caregivers play an essential role in shaping their children's technology habits. Children learn their relationship with technology by observing their caregivers' usage habits (modelling), including personal boundary-setting, and caregivers are responsible for setting limits on and controlling their children's access to technology (Domoff et al., 2020).

Advantages and cautions

Advantages

- Devices (smartphones, tablets, computers, smart boards), online platforms, and high-quality apps and games can support learning in school and at home (Canadian Paediatric Society, 2019; Walker, 2022). Examples include using computers to complete schoolwork, gaining skills from creating content (such as video editing), and using educational apps that promote math and reading skills. Technology can also support learning for children with disabilities and developmental delays (Walker, 2022).
- Various forms of technology facilitate communication and connection with family and friends (Canadian Paediatric Society, 2019; Walker, 2022).
- Many children use video games to socialize. Video games, particularly co-operative or competitive games, can contribute to cognitive development (problem-solving skills) and social development (collaboration, pro-social behaviour; Canadian Paediatric Society, 2019; Walker, 2022).

Cautions

- Social media and video games can expose children to inappropriate or harmful content that they may not yet have the cognitive abilities to handle or protect themselves from. This can include cyberbullying, hate speech, false information, violent and sexual content, online scams, and oversharing personal information or communicating with strangers (Canadian Paediatric Society, 2019; Gottschalk, 2019; Knowledge Institute, 2025; Walker, 2022). See Young people in the digital era: Understanding risk factors and promoting well-being for more information on types of harmful digital content.
- For more information on types of harmful digital content, see Young people in the digital era: Understanding risk factors and promoting well-being.
- When caregivers rely on technology to manage their child's behaviour, it may hinder their child from developing self-regulation skills and delay of gratification (Domoff et al., 2020).
- Using social media, texting, browsing online, or playing games while doing homework (multi-tasking) disrupts problem-solving and reading, as well as children's confidence in their ability to do homework (Canadian Paediatric Society, 2019).
- Children's apps often feature a significant amount of advertising through persuasive and disruptive methods, such as promoting in-app purchases (Domoff et al., 2020; Meyer et al., 2019).

Signs of PTU (Canadian Paediatric Society, 2019)

- Interferes with daily activities (school, sleep, physical activities, playing offline, withdrawing from face-to-face interactions).
- Oppositional behaviour (anger) when screen time limits are set.
- Complaints of boredom or unhappiness when unable to use technology.
- Experiencing negative emotions because of technology use (feeling angry or sad after playing video games or interacting with others online).

For children with PTU that significantly affects daily functioning, specific interventions may be necessary. Intervention approaches are discussed in the recommendations section for the teen and transition years.

Recommendations

The Canadian Pediatric Society recommends that service providers continue to guide caregivers using the 4M's of screen time, which differ slightly in the middle years: managing, encouraging meaningful use, modelling healthy use, and monitoring for signs of problematic use (Canadian Paediatric Society, 2019). The 4M's in early childhood emphasize how caregivers can manage their children's technology use. For the middle years, recommendations shift toward helping caregivers support their children's growing autonomy with technology and to build digital resiliency, especially as children begin to receive their first mobile devices.

- **Manage technology use**. Encourage caregivers to be present and engaged when technology is being used and discuss content, particularly when harmful content comes up. Caregivers can become familiar with parental controls and privacy settings (setting up a YouTube Kids profile; Family Pairing on TikTok) and speak with their children about acceptable and unacceptable online behaviours. Caregivers can also encourage and model focusing on one task at a time, such as taking specific, limited time for technology use and setting aside time for homework away from technology.
- **Encourage meaningful technology use**. Caregivers can help children choose appropriate content and recognize problematic content. Daily routines such as face-to-face interactions, sleep, and physical activity should be prioritized over technology use.
- **Model healthy technology use**. Encourage caregivers to reflect on their own technology habits. Establish regular screen-free periods, such as during meals and time spent socializing with the family. Screens should be turned off when not in use and avoided one hour before bedtime.
- **Monitor for signs of problematic technology use**. Caregivers can monitor their child's behaviours for signs of PTU (see Signs of PTU box above for more information).

Resources for service providers

- Digital media: A clinician's guide to counselling parents of school-aged children and adolescents provides more information on conversing with caregivers about technology use.
- Young people in the digital era: Understanding risk and promoting well-being describes strategies for fostering digital resilience.

Teen years

The Knowledge Institute defines the teen years as 13 to 18 years old (Knowledge Institute, 2024b). The teen years mark the beginning of a transition from childhood to adulthood, characterized by physical, cognitive, social, and emotional changes (Hutton et al., 2024; Walker, 2022). Brain development continues during this stage, improving abstract thinking, reasoning, impulse control, and problem-solving abilities (Patel et al., 2020). However, brain regions associated with the reward system mature faster than those regulating emotions and behaviour, increasing susceptibility to risk-taking behaviours (Hutton et al., 2024; Patel et al., 2020). Socially, teens may begin placing more importance on peer and romantic relationships, spending less time with family and exploring their sexuality and romantic interests. Developing and expressing identity independently from family is key during this stage (Walker, 2022). Mental health and substance use health challenges can emerge during the teen years, influenced by biological and environmental factors and psychosocial stressors (Alderman et al., 2019; Patel et al., 2020; Walker, 2022).

Characteristics of technology use

Teens' technology use is predominantly centred around mobile devices, which are used for communication, socializing, accessing information, and entertainment (Dienlin & Johannes, 2020; Hutton et al., 2024; Walker, 2022). As peer and romantic relationships become more important, teens connect by turning to texting and social media platforms (Walker, 2022). Young people use social media almost universally, with YouTube, TikTok, Instagram, and Snapchat being the most used (Dienlin & Johannes, 2020; Ponti, 2023; Walker, 2022). During this stage, young people often access

information online and, similar to the middle years, use technology for schoolwork (Walker, 2022). Technology is also an essential platform for entertainment, with teens streaming videos, listening to music, and playing games.

Gaming on mobile devices and gaming consoles is popular among teens (Hutton et al., 2024; Walker, 2022). This is the stage where online gambling may begin to emerge despite age restrictions on most gambling activities. Innovative forms of gambling, such as loot boxes integrated into video games, have blurred the line between gambling and gaming, leading to online gambling becoming more appealing and accessible to young people (CAMH, n.d.-c; Montiel, 2021).

Advantages and cautions

Advantages

- Technology, including social media and video games, helps teens stay connected to family and friends, enhance the quality of their relationships, and connect with peers with similar interests and life experiences (Canadian Pediatric Society, 2019; Chassiakos & Stager, 2020; Dienlin & Johannes, 2020; Haddock et al., 2022; Prinstein et al., 2020; Walker, 2022).
- Social media can provide teens with opportunities to develop supportive relationships and receive emotional validation. It offers teens the opportunity to explore unique and diverse communities and cultures, and to build social capital. Technology provides social spaces to connect on common interests and life experiences. For some young people, these spaces offer vital avenues to link up with safer and supportive virtual communities that might not otherwise be available in person (Canadian Pediatric Society, 2019; Chassiakos & Stager, 2020; Prinstein et al., 2020).
- Technology can be a platform for teens to explore and express their identities. It can provide an opportunity for creative expression through designing and posting photos and videos, engaging in hobbies (music, reading), and exploring their sexuality (Canadian Pediatric Society, 2019; Chassiakos & Stager, 2020; Haddock et al., 2022; Prinstein et al., 2020; Walker, 2022).
- Technology serves as a gateway to news and information by fostering learning, exploration, and personal growth (Chassiakos & Stager, 2020; Dienlin & Johannes, 2020; Haddock et al., 2022).
- Playing video games may have short-term cognitive benefits, such

as increased attention and working memory (Canadian Pediatric Society, 2019; Haddock et al., 2022; Hutton et al., 2024).

- Technology can be used to deliver e-mental health services. Examples include using mobile apps for self-guided mental health support, online counselling, online peer support, and telephone help lines. E-mental health services can remove barriers to care, especially for teens living in rural and remote areas with limited access to in-person supports (Mental Health Commission of Canada, 2014).

Cautions

- Teens can continue to encounter or engage in harmful online content and behaviours including cyberbullying, hate speech, false information, violent and sexual content, scams, oversharing personal information, and communicating with strangers (see Young people in the digital era: Understanding risk factors and promoting well-being; Canadian Pediatric Society, 2019; Chassiakos & Stager, 2020; Dienlin & Johannes, 2020; Knowledge Institute, 2025; Walker, 2022).
- Social media can present teens with idealized versions of others' lives, fostering comparisons and feelings of inadequacy (Chassiakos & Stager, 2020; Dienlin & Johannes, 2020; Walker, 2022).
- Multi-tasking, such as using technology while doing homework, may result in distraction and procrastination and negatively affect academic performance (Canadian Pediatric Society, 2019; van der Schuur et al., 2015).
- Technology use can interfere with sleep, including delayed bedtime and shorter sleep duration (Canadian Pediatric Society, 2019; Chassiakos & Stager, 2020). Other potential physical health concerns are greater sedentary behaviour, vision problems, headaches, and musculoskeletal complaints such as back pain (Canadian Association of Optometrists/Canadian Ophthalmological Society, 2017; Canadian Pediatric Society, 2019).
- Many digital technologies, including social media and video games, foreground fast trends and consumerism, as they rely on advertisements to sustain their platforms. Through classic ads and campaigns with influencers, young people can be constantly exposed to pressure to make impulsive and excessive purchases (Nyrhinen et al., 2024).

- Online gambling is easy and convenient to access, especially when integrated into video games (CAMH, n.d.-c.; Montiel et al., 2021). This creates opportunities for teens to engage in online gambling without age verification or supervision from their caregivers (Montiel et al., 2021).

Signs of PTU

- Being preoccupied with technology (thinking about technology when not using it).
- Using technology as an escape to reduce negative emotions.
- Needing to use technology more to achieve the same level of satisfaction.
- Feeling distressed if not able to use technology.
- Using technology in a way that interferes with daily functioning (school, work, sleep, withdrawing from face-to-face interactions).
- Continuing to engage in excessive and compulsive technology use despite negative consequences.

Transition years

The transition years mark the period between adolescence and adulthood. Across research literature, the age ranges vary from 15 to 29 years old. The Knowledge Institute defines the transition years as 19 to 25 years old (Knowledge Institute, 2024a).

The transition years are a period of exploration and opportunity, when young people begin to step away from the dependency of adolescence while building the skills needed for adulthood (Hessel, 2023). It is a stage when they explore their identity, relationships, careers, and beliefs about the world (Arnett, 2000; Coyne et al., 2013).

During this time, young people are developing the qualities needed to become independent in making important life decisions, establishing mature and committed relationships, taking on greater responsibilities, and gaining the education and training to serve as the foundation for their future careers (Wood et al., 2018). However, this phase may also bring about instability due to changes in life factors like living situations, hobbies and career ambitions, and peer, family, and other supportive relationships. This can lead to a sense of feeling "in-between" adolescence and adulthood. Nevertheless, the transition years can be full of opportunities and optimism about what lies ahead (Coyne et al., 2013).

Characteristics of technology use

Technology has become integral to many aspects of young people's lives, offering opportunities for online courses, remote work, entertainment, and socializing. It can help young people stay connected with family and friends, especially if they move away after high school, fostering a sense of continuity and support (Knowledge Institute, 2024a; Stockdale & Coyne, 2020; Wiegle et al., 2021).

The shift to greater independence, reduced support, and less parental monitoring during the transition years has the potential to lead to intensive use of technology (Stockdale & Coyne, 2020). For post-secondary students, there is greater flexibility compared to the structured environment of high school. This blend of flexibility and decreased supervision creates increased opportunities for technology use throughout the day (Stockdale & Coyne, 2020). Online gambling tends to emerge more in late adolescence, coinciding with increased access to legal gambling after reaching the age of 19 in Ontario (Emond et al., 2022).

Advantages and cautions

The same advantages and cautions of using technology in the teen years extend to the transition years. However, there are additional considerations unique to this age group.

Advantages

- Technology can complement and facilitate relationships, helping maintain connections that may be threatened by life changes such as moving, starting or finishing post-secondary education, or switching jobs (Coyne et al., 2013).
- Technology is not just a tool for socializing, but also for education and employment. For example, technology can be used for completing and submitting course work or watching online lectures, and it plays an essential role in the workplace through communication tools (email, video conferencing) and software applications. Young people need a certain level of technology literacy to thrive in academic and career settings (Sánchez-Fernández & Borda-Mas, 2023; Wiegle et al., 2021).
- Technology continues to be a platform for exploring individual identities. It allows young people to engage in online communities for entertainment, support, and expression of creativity (Coyne et al., 2013).

Cautions

- Technology use can increase during the transition years as young people become more independent and caregivers are monitoring less (Stockdale & Coyne, 2020). This is particularly evident for young people in university and college, where the increased flexibility in their daily schedules and reduced supervision from teachers can contribute to greater technology use (Stockdale & Coyne, 2020).

- Using smartphones for texting and social media can negatively impact attention and learning in post-secondary education, distract other classmates, and affect academic achievement. Students often assume their instructors are unaware of their device usage and that they can use devices without being noticed, especially in larger classes (Bjornsen, 2018; Coyne et al., 2013).
- Information and content shared online can stay online forever. Depending on the nature of the content, this can negatively affect job opportunities and employers' perceptions of professionalism (Drouin et al., 2015).

Signs of PTU

- Being preoccupied with technology (thinking about technology when not using it).
- Using technology as an escape to reduce negative emotions.
- Needing to use technology more to achieve the same level of satisfaction.
- Feeling distress if not able to use technology.
- Using technology in a way that interferes with daily functioning (school, work, sleep, withdrawing from face-to-face interactions).
- Continuing to engage in excessive and compulsive technology use despite negative consequences.

Recommendations for the teen and transition years

Service providers can continue promoting healthy technology use with young people in the teen and transition years and, when appropriate, their caregivers. Recommendations for young people are rooted in psychoeducation, harm reduction approaches, and digital literacy, as well as developing a skillset and creating an environment that fosters resilience.

Psychoeducation and harm reduction

- As children transition to the teen years and gain more autonomy, they can be engaged in conversations about technology use in a curious and non-judgemental way. Education can be provided on the advantages and cautions of technology use and approaches to reduce harm (CAMH, n.d.-b.; Chassiakos & Stager, 2020; Joshi et al., 2019).
- To inform and support these conversations, service providers can stay informed on the changing landscape of technology, including emerging digital trends and risks (new social media platforms, concerns related to artificial intelligence) and the opportunities and cautious that exist.

- Service providers can also continue to use the 4M's of screen time to guide young people and their caregivers, helping to them to develop healthy habits and foster digital resiliency (Canadian Paediatric Society, 2019).
- Service providers can help young people develop skills to help manage technology use and build resilience such as mindfulness, self-regulation, self-awareness, and self-compassion (CAMH, n.d.-b).

Family-based interventions

- Family dynamics, including parenting styles and family relationships, can be either a risk or protective factor for developing PTU. Family-based interventions aim to improve general family functioning and communication between caregivers and young people and could include conversations and guidance on technology use (CAMH, n.d.-c; Ding & Li, 2023; Pluhar et al., 2019).
- Caregiver involvement to help young people address PTU can be beneficial if the young person is open to their caregiver(s) having a role. Caregivers can support monitoring technology use at home while honouring the young person's goals for addressing their PTU. This approach may differ from how caregivers envision their child's technology use. Educating caregivers on harm reduction and promoting balanced technology use is crucial (Mutschler & Aubrey, 2023).
- Caregivers are encouraged to have conversations with young people to understand who they are interacting with online, their privacy settings, and the content, apps, and websites they often view or use. Establishing open, non-judgemental communication with young people fosters trust and ensures they have support if issues arise (CAMH, n.d.-b.; Chassiakos & Stager, 2020; Joshi et al., 2019).
- Family-based approaches can help young people in the transition years address PTU, when appropriate. Conversations with caregivers about the advantages and cautions of technology use, harm reduction approaches, and managing and monitoring online lives can evolve with young people's increasing autonomy (Chassiakos & Stager, 2020).

In some instances, additional support may be required to address technology use. Research on effective interventions and best practices for young people experiencing PTU is limited, and the approach and supports for PTU may look different depending on the type of technology use and severity (CAMH, n.d.-a). However, the following approaches can help young people in the teen and transition years address PTU at various intensities.

Interventions

- **Cognitive-behavioural therapy (CBT)** aims to support young people in noticing and changing negative thought patterns associated with technology use. It helps them become more aware of their PTU, identify triggers for their technology use, and discover alternate activities and protective factors to reduce PTU (CAMH, n.d.-b, c; Ding & Li, 2023; Mutschler & Aubrey, 2023; Pluhar et al., 2019). CBT can also help address underlying mental health concerns (CAMH, n.d.-b; Pluhar et al., 2019).
- **Motivational interviewing** is a client-centred approach that helps young people navigate ambivalence about change. It can help strengthen their readiness and motivation to address PTU (CAMH, n.d.-b, c; Joshi et al., 2019; Mutschler & Aubrey, 2023).

A combination of the above recommendations and interventions can effectively support young people experiencing PTU.

Resources for service providers

- CAMH provides comprehensive training courses for service providers on identifying and treating PTU. These courses cover a range of topics, including understanding the psychological aspects of technology use, effective intervention strategies, and best practices for working with young people during the transition years.
- Kid's Help Phone Resources Around Me is a tool that service providers can recommend to young people to help them search for in-person, virtual, and digital mental health and well-being supports. The search engine includes a database of verified youth mental health apps.

Conclusion

Technology has become an integral part of young people's daily lives, especially since the COVID-19 pandemic. Understanding and addressing technology's impact is crucial for promoting well-being and development.

It is important to acknowledge that using any form of technology comes both with benefits and drawbacks. The impact of technology depends on how it is used, rather than being inherently good or bad. Whether technology is helpful or harmful depends on various factors that can either increase or decrease the likelihood of problems arising. For children and young people, the impact of engaging in potentially harmful technology behaviours is influenced by many personal, behavioural, and environmental factors (Domoff et al., 2020; Rega et al., 2023).

Specific strategies may differ across developmental stages. However, service providers can apply these general recommendations when supporting children, young people, and their caregivers.

- **Take a harm reduction approach.** Acknowledge that completely avoiding technology may not be realistic or desirable. Instead, aim to minimize the negative consequences of technology use while leveraging the benefits and promoting healthy habits (CAMH, n.d.-b.; Chassiakos & Stager, 2020; Joshi et al., 2019).
- **Promote transferrable skills.** Help children and young people develop skills to manage their technology use, such as mindfulness, self-regulation, self-awareness, and self-compassion (CAMH, n.d.-b). For example, self-awareness can allow children and young people to recognize how technology use affects their mood and the steps they can take to adjust their habits.

- **Consider personal, behavioural, and environmental factors.** Many factors significantly impact the relationship children and young people have with technology – for example, pre-existing mental health concerns, using technology actively or passively, and socioeconomic status. It is imperative that service providers tailor interventions accordingly and strive to meet the individual where they are, and in a way that is responsive to their linguistic, cultural, and accessibility needs (Domoff et al., 2020; Heller, 2021; Ponti, 2023).
- **Promote digital literacy skills.** Help children and young people navigate digital technology effectively by helping them learn to evaluate the quality of content, recognize potential risks, and make responsible choices. It is important for caregivers and service providers to also develop their own digital literacy skills to effectively support children and young people (Knowledge Institute, 2025).

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