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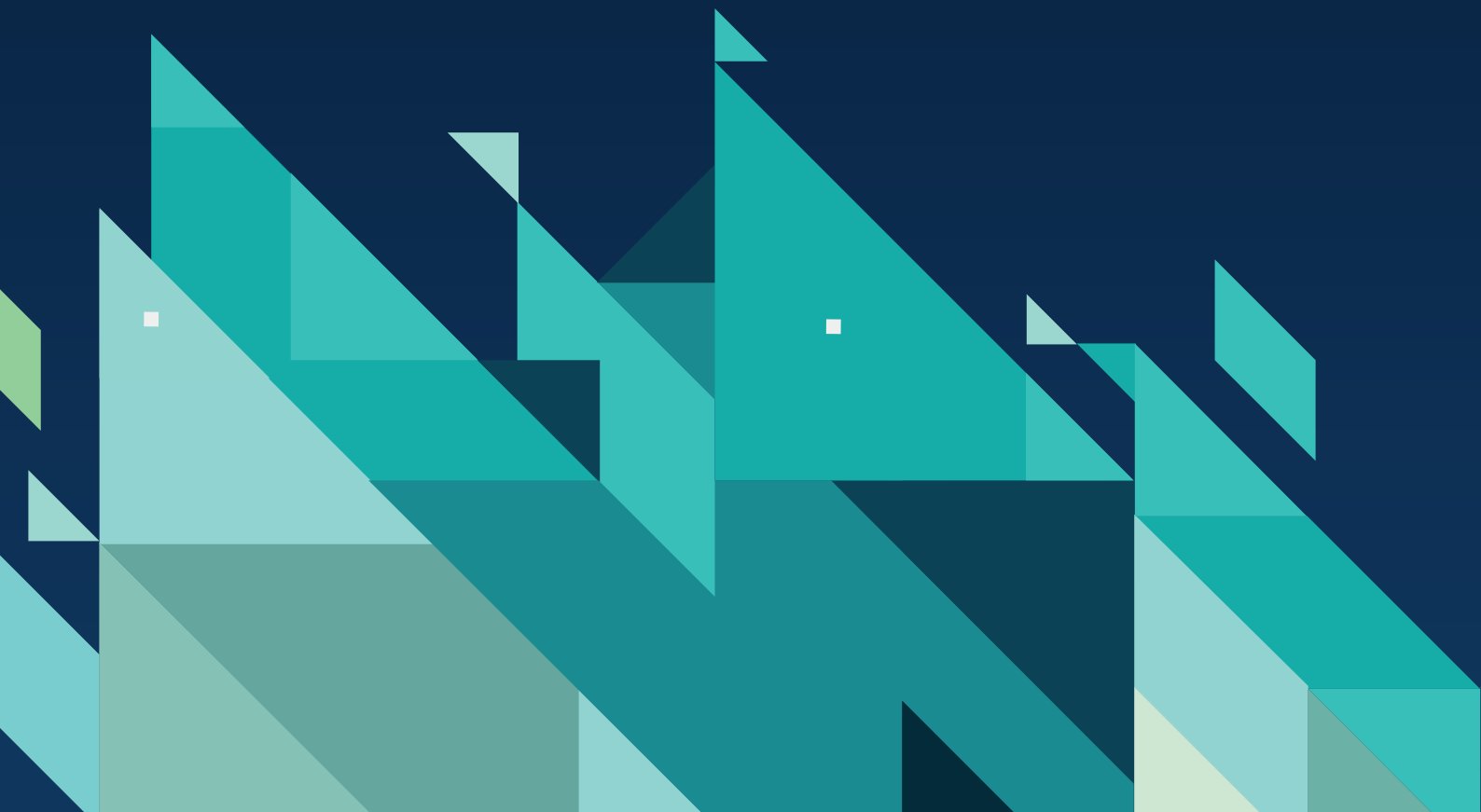
Parenting in a digital era: A narrative review

CELINE FOX, DEIRDRE ROBERTSON AND PETE LUNN



PARENTING IN A DIGITAL ERA:

A NARRATIVE REVIEW

Celine Fox

Deirdre Robertson

Pete Lunn

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THE AUTHORS

Pete Lunn is a Research Professor at the Economic and Social Research Institute (ESRI) and Adjunct Professor of Economics at Trinity College Dublin (TCD). Deirdre Robertson is a Senior Research Officer at the ESRI and Adjunct Professor of Psychology at TCD. Celine Fox is a Postdoctoral Research Fellow at the ESRI.

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ACRONYMS

AI	Artificial intelligence
API	Application programming interface
EU	European Union
HSE	Health Service Executive
LGBTQ+	Lesbian, gay, bisexual and transgender
NACOS	National Advisory Council for Online Safety
UN	United Nations
UK	United Kingdom
UNICEF	United Nations Children's Fund
US	United States
VLOP	Very large online platform
VLOSE	Very large online platform search engine
WHO	World Health Organization

EXECUTIVE SUMMARY

School-aged children and adolescents under 18 in Ireland spend more time online than ever before. 'Digital technology' is a broad term that refers to electronic devices like computers, smartphones, smart TVs and game consoles. These devices can connect to the internet and access various types of online content, including games, social media, streaming services and educational resources. While digital technologies offer numerous benefits, such as access to information, educational tools and social connection, they can also pose risks to the mental wellbeing of children and adolescents. Many governments, including Ireland's, have introduced policies to protect children online. Knowing when and how digital technologies cause harm can guide the development of effective policies. This review summarises international research on the effect of digital technologies on school-aged children and adolescents. Findings are presented as follows: 1) the impact of digital technology on wellbeing; 2) the challenges of parenting in a digital era; and 3) public health and policy interventions to protect children and adolescents online.

This review adopts a narrative approach to explore this topic. It includes a broad literature search from academic databases, grey literature and non-academic sources, ensuring a wide range of insights from various disciplines. Both academic and non-academic sources are critically appraised to provide a balanced and contextually relevant discussion that may inform future research, policy and practice. This review includes a total of 297 references. Notably, this is a rapidly evolving area, with new research publications and policy developments emerging daily. As such, while the review offers a current overview, it can be viewed as a snapshot of a continuously shifting landscape. The findings of this review are summarised below.

THE IMPACT OF DIGITAL TECHNOLOGY ON CHILDREN'S WELLBEING

- Digital technologies can offer benefits for children, including opportunities for social connection, learning, creativity, exploration, seeking support and play. Around the world, children view access to digital technologies as essential for exercising their rights to information and meaningful participation in society.

- The overall impact of digital technology on children's wellbeing is not clear cut. Specific uses, such as some forms of social media and gaming, can negatively impact wellbeing. These effects can be non-linear, bidirectional and shaped by socioeconomic factors, the child's gender, developmental stage and cultural and social context.

- Digital companies use a range of persuasive design strategies (such as infinite scrolling and personalised feeds) to maximise the time children spend online. These tactics have addictive potential.

- Unique features of the online world, such as the ability to quantify social feedback through 'likes' and to curate an ideal self through editing, may explain in part how digital platforms negatively impact wellbeing.

- Children frequently encounter harms online, including exposure to age-inappropriate or harmful content, interactions with malicious individuals, involvement in risky behaviours and falling prey to deceptive contracts. These often lead to distress. While not all children experience these harms, many do, suggesting that there is insufficient protection against them.

- Content recommender algorithms can expose children to misogynistic, extremist and self-harm related material, which research links to both online and offline risks for girls and boys.

THE CHALLENGES OF PARENTING IN A DIGITAL ERA

- Parents are often considered the first, last and strongest line of defence for their children's online safety. Yet, they too face digital risks, including device overuse. While reduced usage among adults through randomised interventions has been shown to improve mental health and wellbeing, complete abstinence can harm an individual's social connectedness, highlighting the complex role of digital platforms in our lives and the importance of considering collective impacts. Beyond their own usage, parents face the challenge of maximising children's opportunities, while minimising risks online.

- Parents can employ a range of mediation strategies to intervene in their child's digital activities. Technical controls can lull parents into a false sense of security and may be easily bypassed by children. Technical controls can negatively impact the parent–child relationship, by heightening conflict, eroding trust and invading the child's privacy.

- Parents have greater knowledge of their child's online experiences when they adopt active mediation strategies. This involves discussing ways to use devices safely while encouraging children to explore and learn new things online and supporting skill development. Adopting active mediation strategies improves children's digital maturity, resilience and safety online. Alongside active mediation, setting clear rules and boundaries around digital device usage may reduce children's risk of negative experiences online.

- Excessive parental phone use disrupts parent–child interactions, undermines family relationships and contributes to children's emotional distress and problematic internet use.

- Parenting programmes could equip parents to protect their children from online harms. Effective interventions may address parents' device usage, parent–child communication, parents' confidence and knowledge about digital devices, and children's ability to cope with negative online experiences.

- Various resources and programmes are readily available to support parents in Ireland, such as public campaigns, online guidelines and in-person interventions. However, the impact of these interventions on digital habits remains uncertain, and accessibility barriers – particularly for lower socioeconomic groups – must be addressed to enable broader participation.

PUBLIC HEALTH AND POLICY INTERVENTIONS TO PROTECT CHILDREN ONLINE

- Parents cannot be solely responsible for safeguarding children online. Ensuring children's online safety requires coordinated efforts from parents, schools, digital technology companies and governments.

- Policymakers can consider adopting robust age verification and standardised content reporting mechanisms to better protect children from harmful digital environments and promote safer online spaces.

- Smartphone bans in schools are gaining support in several countries as a way to promote focused learning and limit exposure to harmful content during school hours. Some critics argue that this approach inhibits digital literacy among students; others argue that it is a precautionary measure. Evidence on the effects is inconclusive.

- Approaches like mystery shopping, where simulated child accounts are used to explore real user experiences, can be used to give insights into how platforms operate, get real-time updates on changes in response to policies and reveal the types of risks that children might be exposed to.

- The 'Child Rights by Design' approach moves beyond simply restricting harmful content and instead fosters environments that actively support healthy development. Informed by behavioural science evidence, these principles guide how platforms can design user interfaces, notifications, algorithms and data practices to promote online safety.

- Providing independent researchers with access to online platform data, such as that relating to content exposure, usage patterns and the algorithmic

behaviour of social media platforms, can also support a deeper understanding of the effectiveness of safety measures and help inform future improvements.

FUTURE DIRECTIONS

- The fact that evidence on the effect of digital technologies on mental wellbeing is so mixed may be due to: studies combining all digital technologies into one category; studies using simplified metrics such as screen time; studies using different definitions, measures and methods; and studies measuring only effects on individuals instead of on the collective.

- To better understand the relationship between digital technology and mental wellbeing, researchers could benefit from adopting a shared lexicon and obtaining objective usage data from digital platforms or devices, along with conducting high quality longitudinal and other studies that can help to determine causality.

- The digital technology sector changes at pace. Researchers and regulators need agile, real-time, proactive methods to stay up to date. Simulating children's online experiences can reveal how platforms handle age verification, safety features and reporting mechanisms in practice. Regulators can also facilitate access to platform data for independent research, ensuring oversight is grounded in evidence. Alongside this, behavioural science can inform safer design. New technologies can be tested in controlled, experimental settings before they are widely released, to ensure they meet safety and child protection standards.

CONCLUSION

Children's online safety can be considered a public health problem requiring public health interventions. Parents, schools, digital technology companies and governments need to co-ordinate their efforts to ensure children's wellbeing when engaging with digital technologies. This review of the literature gives some insight into when and where harms occur, and what types of interventions may help. Future research is needed to test interventions that can inform policies that protect and promote children's wellbeing in the digital world.

CHAPTER 1

General introduction

Digital technologies have fundamentally transformed childhood and adolescence. The internet, accessed through smartphones, tablets, computers and consoles, has become a staple in the lives of young people. These innovations have reshaped education, social interactions, leisure activities and societal engagement.

Globally, internet access and usage has surged among children and adolescents (Anderson & Jiang, 2018; Holloway et al., 2013; Ofcom, 2023a; Smahel et al., 2020). In Ireland, almost all households with dependent children have internet access (CSO, 2023), and some surveys estimate that 94 per cent of children aged 8–12 years own a smart device and that 99 per cent of those aged 12–14 years own a smartphone (CyberSafeKids, 2024), although the latter figures are not from a nationally representative sample. Across European countries, most children aged 9–16 years prefer to go online using their smartphones, permitting connectivity anywhere and at any time (Smahel et al., 2020). Yet, children much younger also have smartphones, including 24 per cent of six year olds (CyberSafeKids, 2024). This is consistent with evidence from the United Kingdom (UK), where one in four five to seven year olds (Ofcom, 2024a) and one in five three year olds (Ofcom, 2023a) own a smartphone. While smartphones are ubiquitous, children can access the online world through a host of other digital devices. Among a nationally representative sample of nine year olds in Ireland, the most used device was a tablet, followed by a smartphone and games console, which most children reported owning themselves (McNamara et al., 2021). In sum, smart device ownership is widespread and has reached an unprecedented level across children of all ages.

This increase in device ownership has resulted in increased time spent online. Over the past decade, the average length of time spent online by children has markedly increased in Ireland (NACOS, 2021), the UK (Livingstone et al., 2017) and across Europe (Smahel et al., 2020). Most children in Europe report a high frequency of online engagement, using their smartphones daily or almost all the time (Smahel et al., 2020). In the United States (US), 45 per cent of adolescents reported being online ‘almost constantly’ (Anderson & Jiang, 2018). In Ireland, the NACOS (NACOS) (2021) was established to conduct a series of nationally representative studies to understand the online experience of children and their parents. They found that 70 per cent of 9–17 year olds have at least daily access to their smartphone. Among a nationally representative sample of 13 year olds in Ireland, more than 1 in 10 reported spending over 3 hours on online activities (such as social media usage, messaging and streaming) on a typical weekday (Smyth et al., 2023).

Investigating the online activities of 9-year-old children in Ireland, McNamara et al. (2021) found that common online activities include playing games, watching YouTube videos and searching for information. Popular gaming platforms among 8–12-year-old children in Ireland include Roblox and Fortnite, while older children (12–14 years) prefer Discord and Twitch (CyberSafeKids, 2024). As children get older, social media becomes the most popular way to spend time online. Most children over eight years in Ireland have their own social media or instant messaging accounts (CyberSafeKids, 2024). This is despite many social media platforms and services, such as TikTok and Instagram, having a minimum age requirement of 13. The most popular social media platforms among children in Ireland are YouTube, Snapchat, Instagram and TikTok (NACOS, 2021).

How children use the internet depends in part on age, gender and socioeconomic status. Ownership of smart devices increases with age (NACOS, 2021; CyberSafeKids, 2024), as does frequency of smartphone usage (NACOS, 2021). While there is less evidence of gender differences in smartphone usage, boys are more likely to own and use game consoles to go online (NACOS, 2021). Comparing the screen-based activities of 13 year olds in Ireland, boys spend more hours gaming, while girls spend more time engaging in other online activities, such as using social media, at weekends (Smyth et al., 2023). Children and adolescents in Ireland from lower socioeconomic backgrounds (as measured by parental occupational class) spend significantly more time on digital devices than those with higher socioeconomic status (Bohnert & Gracia, 2021, 2023). This may be due to barriers to participating in extracurricular activities. These barriers, such as cost, lack of access or lack of transportation, can limit their options for offline recreation, making them more likely to rely on affordable, online alternatives for entertainment and social interaction (Kennewell et al., 2022).

Throughout history, society has regularly panicked over the potentially detrimental impact of technological developments on wellbeing (Orben, 2020). Yet, the internet arguably poses unique concerns for our welfare. Unlike 'older' technologies, such as radio or television, the internet facilitates an unparalleled level of hyperconnectivity and access to unregulated content. The media regularly problematise digital platforms, stirring collective alarm (Korkmazer et al., 2020). Rapid adoption of internet-enabled technologies has fuelled extensive debates among academics over their potential effects on mental health and wellbeing (Appel et al., 2020; Haidt, 2024b; Odgers, 2024; Orben & Przybylski, 2020; Twenge et al., 2020). Children are considered vulnerable internet users because they often lack experience and critical judgment, are more susceptible to manipulation, and are more likely to be exposed to harmful content (Livingstone & Stoilova, 2021).

Prompted by rising public concern in the past decade, governments worldwide have initiated various policies and legislation to protect children online. In 2022, the European Union (EU) introduced the *Digital Services Act*, which is designed to

strengthen protections for users of digital services, including measures to counter illegal content online and to safeguard children from targeted advertisements online (European Commission, 2024). In the UK, the *Online Safety Act 2023* aims to protect children online by making social media companies and search services more responsible for content on their platforms (Department for Science, Innovation & Technology, 2024). Failure to comply with the *Online Safety Act* exposes senior managers to fines and criminal action. In America, more than a dozen states filed lawsuits against the social media platform TikTok for allegedly harming the mental health of children (Sherman, 2024). In Australia, legislation has been introduced to enforce a minimum age of 16 years for social media (Albanese & Rowland, 2024). This is the first time a country will ban all those under 16 from using specific digital platforms.

In Ireland, the legislative landscape recently changed with the passing of the *Online Safety and Media Regulation Act 2022* (Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, 2023). This Act established a new regulator, Coimisiún na Meán, which is responsible for online safety in Ireland (among many other duties in media regulation). Coimisiún na Meán is responsible for Ireland's Online Safety Framework, which includes different pieces of legislation such as the Irish *Online Safety and Media Regulation Act*, which forms the basis of the Online Safety Code (Coimisiún na Meán, 2024). The Online Safety Code (2024) is designed to ensure that any video-sharing platforms that have their EU headquarters in Ireland, such as YouTube, TikTok and Instagram, are held legally accountable for harmful or illegal content. Harmful online content includes materials that relate to cyberbullying, self-harm and suicide, and materials that are deemed age inappropriate. Non-compliance with the Code empowers Coimisiún na Meán to impose sanctions of up to €20 million or 10 per cent of annual turnover (Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, 2023). Additionally, Coco's Law (the *Harassment, Harmful Communications and Related Offences Bill 2020*) criminalises the online distribution and publishing of offensive communication and intimate images without consent (Irish Statute Book, 2020). Since the enactment of Coco's Law, nearly 100 cases have been brought forward for prosecution (Department of Justice, 2024).

Beyond legislation, the Irish government has launched multiple initiatives to protect children online. The Minister for Health in Ireland has described children's exposure to harmful content online as a 'public health crisis' (Newstalk, 2024), stating that the damages incurred by children from social media have been likened to those caused by smoking. The Department of Health has established the Online Health Taskforce, which aims to develop a public health response to harms caused to children by online activity (Department of Health, 2024a). To curb the widespread ownership of smartphones, the Department of Education has launched an initiative that encourages parents to avoid buying smartphones for

children in primary school (below 12 years old) (Department of Education, 2024). The Minister for Education has also announced plans to make secondary schools smartphone-free zones, allocating €9 million for devices to lock away students' smartphones (RTÉ, 2024). Evidently, the Irish government is taking numerous steps to protect children from online activities. To what extent online activities are causing harm and how such harm arises are therefore fundamental research questions that relate directly to assumptions underpinning current government policy.

To address these questions, our review is segregated into three sections. In the first section, we unpack the relationship between digital devices and mental wellbeing, with a particular focus on potential harms for school-aged children and adolescents. We review and assess the (sometimes conflicting) evidence regarding the ways in which digital devices may be a hindrance for wellbeing. We then discuss the unique features of online spaces and digital technologies that may affect wellbeing. We also consider the specific safety risks that children and adolescents are exposed to online, and how these risks make children and adolescents feel. In the second section, we turn to evidence on the role of parents in protecting children online. We define and describe digital parenting, and discuss the techniques that parents can implement to maximise benefits while minimising risks for their children during online activities. We additionally discuss how parents can influence their child's welfare online through their own actions and attitudes. In the final section, we outline potential public policy measures to safeguard children and adolescents online, with a particular focus on Ireland. This involves interventions at all levels of a child's environment, from daily family life to international legislation.

CHAPTER 2
Children's wellbeing online

2.1 OVERVIEW

In this section, we explore the relationship between digital technology and wellbeing and mental health, focusing on the unique vulnerability of school-aged children and adolescents. We discuss both the potential benefits and the potential risks, and how the commercial goals of digital platforms often prioritise profit over safety, leading to design choices that increase the risk of problematic usage. We consider the unique features of the online landscape that are potential mechanisms of action underlying wellbeing effects. Additionally, we consider the various risks children face online, including exposure to harmful content, inappropriate contact and exploitative conduct.

2.2 THE IMPACT OF DIGITAL TECHNOLOGY ON WELLBEING

'Digital technologies' is a broad term that covers devices such as computers, smartphones, smart TVs, game consoles and other electronic devices. These in turn can access multiple types of online content such as games, social media, streaming channels and educational resources. Digital technologies can offer significant benefits to children in today's world. Use of digital technologies promotes digital skills, which are vital for progression in the modern world (Winther et al., 2019). Engagement in learning-oriented digital activities is associated with improved prosocial functioning among adolescents in Ireland (Bohnert & Gracia, 2023). Learning-oriented digital activities are also associated with better academic outcomes, but only for adolescents with high socioeconomic status (Bohnert & Gracia, 2023). Social media can have interpersonal benefits, by fostering a sense of belonging and socialisation in the online and offline worlds (Dredge & Schreurs, 2020). Additionally, social media platforms, such as YouTube, have the potential to support creativity development when used in educational environments (Vilarinho-Pereira et al., 2021). These online platforms represent an easily accessible space for social support, particularly for those struggling with depression, anxiety or stress (Rideout & Fox, 2018). Individuals with depression, who tend to receive less social support offline, can experience higher actual social support online following disclosures through status updates (Park et al., 2016). Among adolescents that identify as lesbian, gay, bisexual or transgender (LGBTQ+), online platforms provide access to educational information and emotional support, which can be advantageous for identity development and wellbeing (Levinson et al., 2020). In school, the increased uptake in digital technology aims to enhance the learning experience by fostering a more interactive and collaborative environment (Mercer et al., 2019). During the COVID-19 pandemic, digital technology facilitated continued education in the face of school closures worldwide.

As part of the United Nations (UN) Committee on the Rights of the Child, consultations with 709 children and young people aged 9–22 years, across 27 countries, revealed the strong view among participants that digital technology is essential for realising their rights, and that digital access is a basic need (Third & Moody, 2023). Digital devices could aid children's rights related to education, health, information, participation and freedom of expression. Children in Ireland have the right to be heard, which they believe can be progressed through social and digital media (O'Neill et al., 2021).

The online space, however, may represent a double-edged sword. In Ireland, one survey found that 43 per cent of 8- to 12-year-old children describe their experiences online as 'mostly' positive (CyberSafeKids, 2024). Despite the potential benefits, concerns have been raised that internet usage directly harms wellbeing and mental health. The time children and adolescents spend on the internet has risen over the past decade. At the same time, rates of mental illness have increased among children and adolescents across countries (Blanchflower, Bryson, & Xu, 2024), with strong evidence of declining wellbeing in English-speaking countries with advanced economies (Blanchflower, Byrson & Bell, 2024; Botha et al., 2023; Lebrun-Harris et al., 2022; Tkacz & Brady, 2021), though this pattern is less consistent in the developing world (Blanchflower & Bryson 2024a; Blanchflower & Bryson, 2024b) and eastern Europe (Blanchflower & Bryson, 2024c). These coinciding trends have fuelled the proposition that internet usage actively disrupts mental health (Abi-Jaoude et al., 2020; Haidt, 2024a; Twenge et al., 2018). Despite a growing volume of multidisciplinary research that has explored the relationship between internet usage and mental health, the results are far from straightforward or conclusive. Among school-aged children and adolescents, some studies report that time spent on digital platforms is negatively associated with psychological wellbeing (Blanchflower, Bryson, Lepinteur, et al., 2024; Kim, 2017; Shakya & Christakis, 2017; Twenge & Campbell, 2018), while other studies report no association (Coyne et al., 2020; Heffer et al., 2019; Jensen et al., 2019; Milosevic et al., 2022). Where studies do record evidence of a negative association between digital technology usage and mental wellbeing, the effects are typically small and weak (Appel et al., 2020; Dienlin & Johannes, 2020; Odgers & Jensen, 2020; Valkenburg et al., 2022). Given this, it has been argued that the average effect of digital technologies, including social media, on child and adolescent wellbeing are too trivial to have practical significance (Odgers & Jensen, 2020) or warrant policy change (Orben & Przybylski, 2019).

However, it would be a mistake to conclude from these findings that the relationship between digital technology and childhood mental wellbeing is benign. The reason for this is that these small (or sometimes non-existent) effects are often based on averages measured across large samples (typically at a single timepoint). In principle, something can be neutral or even beneficial, on average, yet cause strong negative effects for some people in certain contexts. In other words,

averaging data across multiple types of technologies and across large, diverse cohorts can dilute or obscure strong negative effects for different types of digital technologies, for specific subgroups or for the collective. The relationship between digital technology and child wellbeing therefore requires us to look beyond average effects, and to consider different effects for different people with different internet usage patterns, as well as the effects on networks of people.

The relationship between digital screen usage and wellbeing appears to be non-linear, which means that effects measured on average are likely to be misleading. In a large-scale, pre-registered study of over 120,000 adolescents in the UK, the association between digital screen time and mental wellbeing fit to a quadratic function: while moderate usage of digital technology was found to not be harmful, very low or high levels of screen time were negatively associated with wellbeing (Przybylski & Weinstein, 2017). A similarly non-linear relationship has since been verified among a nationally-representative sample of adolescents in Ireland (Brannigan et al., 2023). Among nine year olds in Ireland, spending more than three hours per day on television or digital activities is associated with a significant decline in wellbeing (Bohnert & Gracia, 2021). Therefore, 'heavy' use of digital devices appears to be more strongly associated with worse wellbeing.

Longitudinal research also finds this inverted U shape. Tracking a sample of Australian adolescents' device usage over a week, Modecki et al. (2022) reported that a moderate level of emotional support-seeking, self-distraction and information-seeking online was associated with better short-term stress relief. They concluded that when adolescents engage in technology-based coping, less is more but none is worse. This relationship may vary by socioeconomic context. In Ireland, among adolescents from higher socioeconomic groups, low levels of digital usage (less than one hour per day) are associated with fewer socioemotional difficulties, but among adolescents from lower socioeconomic groups any level of digital engagement is negatively associated with socioemotional wellbeing (Bohnert & Gracia, 2023).

These studies have all averaged across different types of screen-based activities and digital technologies. However, the impact of digital technology on wellbeing varies based on the type of digital media activity. Analysing data from more than 350,000 adolescents across three datasets using specification curve analysis, Orben and Przybylski (2019) found that total screen time across activity types (including television, gaming, internet usage and social media) is weakly association with wellbeing. This paper concluded that various neutral factors, such as wearing glasses, have a stronger negative association with adolescents' wellbeing than digital screen time. However, a re-analysis of the same dataset, which examined each digital media activity for boys and girls separately, found that social media and internet usage have stronger negative effects on wellbeing than

television and gaming, specifically among girls (Twenge et al., 2022). The links between mental health and social media (and the internet generally) among girls were stronger than associations with binge drinking, sexual assault, exercise and obesity. While higher social media usage is associated with poorer mental wellbeing among adolescents, this association appears larger among girls compared to boys (Kelly et al., 2018; Twenge & Martin, 2020; Twenge et al., 2022). This demonstrates that examining social media effects, as opposed to broad screen time measures, provides clearer insights into adolescent mental health effects.

A further complicating factor is that the effect of social media on wellbeing may be contingent on developmental stage. Tracking a sample of children in the UK over 7 years, Orben et al. (2022) found that social media usage negatively predicted life satisfaction during two specific developmental windows, which differed by gender: 14–15 and 19 years for males, and 11–13 and 19 years for females. These windows approximately coincide with puberty and entering adulthood. This UK data also suggest that the relationship between social media usage may be bi-directional. Regardless of age, those who experienced a decline in life satisfaction had higher social media usage one year later (Orben et al., 2022). This reciprocal relationship is also evident for gaming – increased gaming can contribute to later socioemotional difficulties, while existing socioemotional challenges may lead to greater gaming use among children (Vasconcellos et al., 2025). Timing of device ownership is also relevant. In a longitudinal study of thousands of children in Ireland, Dempsey et al. (2020) reported that earlier ownership of a mobile phone among girls (at 9 years old) was associated with worse behavioural adjustment at age 13. Longitudinal evidence has also indicated that the effects vary substantially from adolescent to adolescent (Boer et al., 2022; Orben & Blakemore, 2023). Tracking real-time effects of social media usage on wellbeing, Beyens et al. (2020) recorded distinct patterns of person-specific effects: while 44 per cent of adolescents did not feel better or worse immediately after they passively used social media, 46 per cent felt better, and 10 per cent felt worse. This demonstrates that young people's experiences online may differ considerably from person to person.

Another important factor to consider is the cultural context in which a child is raised. It has been argued that the negative effects of social media are linked to a broader cultural shift toward online socialisation, which has reduced face-to-face interactions among children and adolescents (Haidt, 2024a). Supporting this view, there is limited evidence of a decline in youth mental health in many African countries, where a significant portion of the population lacks internet access (Blanchflower & Bryson, 2024d). Additionally, cross-national data suggest that access to high-speed internet is correlated with poorer mental health outcomes (McClean et al., 2025). While high-speed internet access is only an indirect measure of online social engagement, these findings may help explain why mental health appears to be worsening in cultures with greater internet penetration.

In such contexts, social media platforms can foster environments where users feel trapped – people continue to engage not because they derive genuine personal satisfaction from doing so, but because of powerful social pressures. A recent study illustrates this dynamic (Bursztyn et al., 2024): across experiments with over 1,000 university students, substantial financial compensation was required to stop individuals from using TikTok and Instagram while other people in their social networks kept using them. Most participants reported that they would be better off if platforms like TikTok and Instagram did not exist, yet continued using them out of fear of missing out and social exclusion. Remarkably, many were even willing to pay for a collective deactivation, where everyone would stop using the platforms at once – suggesting their continued engagement was less about preference and more about avoiding disconnection. This phenomenon, referred to as a 'collective trap,' underscores how social dynamics can compel people to use services that may ultimately reduce their wellbeing.

One might summarise the above work by saying that digital engagement, in general, has an influence on children's mental wellbeing, but that the relationship is likely to be non-linear, bi-directional and dependent on digital activity type, gender, socioeconomic circumstances, developmental stage, the individual child and their cultural and social contexts. However, these dependencies are not the only complicating factors. Before drawing conclusions on the general impact of digital technology, we discuss two additional major challenges for research in this area: defining exactly what is being measured and determining causality.

The primary estimate of online activities is reached using self-reported screen time. However, it is unclear how to best operationalise screen time, including the window of estimation (over hours, days or weeks) and the context (whether time is device- or site-specific or summed) (Kaye et al., 2020). Critically, self-report measures are at best only approximate estimates of true screen time. Among 50,000 people from 15 countries, self-report surveys on Facebook usage were found to be only weakly correlated with actual Facebook usage, individuals who spent greater time online being more likely to erroneously estimate actual social media usage (Ernala et al., 2020). For smartphone usage in general, Andrews and colleagues (2015) found neither estimated duration nor number of uses to be valid measures of true smartphone usage for their sample. A meta-analysis found that self-reported and logged digital media usage were only modestly associated, meaning self-reported estimates are not a valid indicator of actual usage (Parry et al., 2021). The difficulty with estimating time spent online may be caused by time distortion, as people tend to become very immersed in the online space and lose track of time (Montag et al., 2019). While self-reported duration of internet use misrepresents actual time spent online, self-reported content (e.g., sites visited) tends to be less biased (Scharkow, 2016). However, most studies only examine

time spent online, overlooking the nature of online activity. This may also include multiscreen use, in which people use multiple devices simultaneously.

The challenge of measuring digital technology usage is compounded by the technology companies and online platforms themselves, as they gatekeep data on usage and engagement (Vuorre & Przybylski, 2023). To determine the true effect of internet usage on children's mental health, data from digital environments need to be accessible for independent and transparent research. The difficulty of measuring engagement is arguably matched by the difficulty of measuring the outcome of interest. Mental wellbeing, mental health and life satisfaction are all somewhat different concepts, and each can be measured in multiple ways. Measures can range from momentary self-reported assessments of how an individual is feeling to diagnosed psychiatric disorders (Kross et al., 2021).

Overall, we lack a consensus on how to define and measure digital technology engagement and mental wellbeing. Not surprisingly, this contributes to mixed and inconclusive evidence. Moving forward, researchers face the challenge of adopting a shared lexicon to describe digital technology usage and wellbeing. Additionally, obtaining objective usage data from digital platforms might provide a more reliable estimate of the relationship between usage and wellbeing. Finally, there is a need for more high quality longitudinal studies that examine the dynamic interactions between usage and wellbeing among large, representative samples. Rising mental ill-health among young people has been described as an 'epidemic' (Haidt, 2024a). One hypothesis is that this is partly driven by digital technologies, highlighting the need for high quality longitudinal data to examine the long-term effects of social media and to determine whether they are driving this trend.

Importantly, correlational evidence, even at a population level over time, does not imply causality. Causality can be established through explicit causal inference methods, such as randomised experiments. For instance, a randomised controlled trial among youths aged 17–25 years with symptoms of depression and anxiety found that reducing social media usage on smartphones by about 90 minutes per day was associated with decreased symptoms of depression, anxiety and fear of missing out, as well as improved sleep quality (Davis & Goldfield, 2025). Another randomised controlled trial reduced social media engagement by 30 minutes daily, in combination with increased physical activity by 30 minutes daily, and found that this led to sustained improvements in emotional wellbeing (Brailovskaia et al., 2022). Critically, these interventions focused on reducing social media usage rather than complete abstinence (Brailovskaia et al., 2022; Davis & Goldfield, 2025). In contrast to reduced usage, a meta-analysis reported that social media abstinence interventions did not improve affective wellbeing, regardless of abstinence duration (Lemahieu et al., 2025). Across three preregistered experiments, abstaining from social media for one full day did not have a positive impact on psychological wellbeing, but was associated with lower social connectedness

(Przybylski et al., 2021). Given that social media is deeply embedded in how people maintain relationships, a complete break from these platforms may unintentionally disrupt meaningful social bonds and diminish one's sense of connection, consistent with evidence that social media represents a 'collective trap'. In summary, the most compelling evidence points to a link between heavy social media use and increased rates of depression and anxiety in early adolescence, particularly among girls. Nevertheless, establishing a direct causal relationship remains a critical research priority. This will require more rigorous methodologies, consistent measurement frameworks and longitudinal studies capable of disentangling correlation from causation. Arguably, the pertinent question is not just whether digital technology impacts wellbeing, but *how* it does so.

2.3 DIGITAL PLATFORMS: THE CONFLICT BETWEEN PROFIT AND SAFETY

Digital products, particularly social media and online gaming platforms, have a business objective to generate revenue. Revenue for digital companies is typically generated through advertisements, rather than users. As such, the design of these platforms aims to maximise reach, consumption and activity to optimise advertisement exposure; the more time users spend on applications and online games, the more advertisements they encounter.

To achieve this, platforms deploy a range of persuasive and often compulsive design strategies aimed at keeping users engaged (Montag et al., 2019). Over the past decade, these platforms have introduced features that mark a shift from traditional concerns about children's online activity, such as exposure to explicit content, toward newer and more covert forms of risk. For example, infinite scrolling on TikTok or streaming on YouTube creates a sense of immersion, which makes it difficult to quit the platform (Montag et al., 2019). Social media and online games involve unpredictable rewards, which also function to prolong user engagement. On social media, the 'push to refresh' function mimics the motion of slot machines so users are never sure what will come up next (Bhargava & Velasquez, 2021). In online games like Roblox, loot boxes that generate random rewards for players also mimic gambling mechanisms (Ó Ceallaigh et al., 2023). Online engagement is also reinforced by social pressure on message apps (Montag et al., 2019). Messaging applications like WhatsApp and Facebook indicate when messages have been read, which puts pressure on users to reply quickly. Users are also under time pressure, as many social media platforms punish users for not engaging. 'Streaks' record consecutive days of engagement and are lost when engagement ceases. Engagement with streaks on social media, such as Snapchat, is associated with problematic internet usage among teenagers (Van Essen & Van Ouytsel, 2023). When frequency of use is reduced, push notifications are designed to lure users back in. Push notifications take advantage of the 'fear of missing out', by reminding users of what is happening online in their absence (Alutaybi et al.,

2019). Social media and online gaming platforms take advantage of unconscious biases – the more time and effort people invest in something, the more they value it (the endowment effect), and the more often people are exposed to something, the more they like it (the exposure effect) (Tom et al., 2007). Finally, content is usually served on a highly personalised feed, based on a user's specific interests and preferences. In sum, digital platforms draw users in through a large range of psychological mechanisms to capitalise on their data. Children's online experiences are shaped by these systems, which have addictive potential (Bhargava & Velasquez, 2021; Montag et al., 2019).

2.4 PROBLEMATIC INTERNET AND SMARTPHONE USAGE

The design features of online platforms are reflected in the increasing time spent by individuals online. While there is considerable debate over how to best conceptualise 'problematic' usage, it is clear that a high proportion of individuals have little control over their internet and smartphone usage (Bhargava & Velasquez, 2021). Problematic smartphone use is typically characterised by withdrawal, tolerance, loss of control, intense desire for use, neglect of other activities and continued use despite harm (Kwon et al., 2013). In Ireland, 45 per cent of 9–17 year olds report spending less time than they should have with family, friends or doing school work because of time spent on the internet (NACOS, 2021). Despite trying, 34 per cent of 9–17 year olds failed to spend less time on the internet. In addition, 34 per cent were bothered when they could not be on the internet. These experiences are consistent with excessive and problematic internet usage (Aboujaoude, 2010). Problematic internet use correlates negatively with health-related quality of life (Machimbarrena et al., 2019) and mental health (Lam, 2014). Since 2014, rates of problematic smartphone use have been rising among adolescents and young adults across countries globally (Olson et al., 2022). Over time, problematic phone use predicts an increase in depression among adolescents (Coyne et al., 2019). Problematic social media use negatively impacts the parent–child relationship by increasing conflict (White-Gosselin & Poulin, 2024).

A major indicator of problematic internet usage is foregoing basic needs, such as sleep, to facilitate internet usage (Aboujaoude, 2010). In Ireland, one in ten children report not eating or sleeping so that they may continue using the internet (NACOS, 2021). To promote optimal health, children require many more hours of sleep per night than adults (Paruthi et al., 2016). The usage of digital devices at bedtime has a detrimental impact on sleep quality and quantity (Carter et al., 2016; Chang et al., 2015; Lund et al., 2021; Sampasa-Kanyinga et al., 2018). While the majority of adolescents used their phone in bed at nighttime, this was most common among females and those from lower socioeconomic backgrounds (Vernon et al., 2018). The negative impact of digital screens on sleep quality is partly due to nocturnal exposure to blue light, which is emitted from screens and disrupts the circadian rhythm (Schmid et al., 2021; Wahl et al., 2019). Among

adolescents, the negative effect of nighttime phone usage on sleep quality predicts a decline in wellbeing, self-esteem and coping over time (Vernon et al., 2018).

Even in the absence of problematic usage, the presence of a smartphone can interfere with normal cognitive functioning. Although research with children is limited, studies among adults have demonstrated the negative effect of smartphones on attention, working memory and learning (Liebherr et al., 2020; Wilmer et al., 2017). One study suggests that the presence of a smartphone on a desk reduces working memory during a cognitively demanding task (Ward et al., 2017); this effect was not replicated when the task was less challenging (Ruiz Pardo & Minda, 2022). In another experiment by Mendoza et al. (2018), students who kept their phone on their person during a lecture had worse quiz performance than those who attended the lecture without their phone. Receiving a phone notification is enough to disrupt attention significantly, even when an individual does not interact with their phone (Stothart et al., 2015). The presence of a mobile phone is sufficiently distracting to impact attention and task performance, especially when tasks are more demanding (Thornton et al., 2014). Individuals work significantly slower in the presence of a turned off smartphone, which impedes concentration and attentional performance (Skowronek et al., 2023). Adults commit significantly more driving errors when a phone is present, either on or off in a holder, or on in a pocket (Chee et al., 2021). Smartphone distraction without interaction might be explained by the fear of missing out, cravings and cue reactivity (Liebherr et al., 2020). Mobile phone users report experiencing phantom vibration and ringing – the feeling that a phone is ringing or vibrating when it is not (Deb, 2015). This research highlights how the permanent presence of smartphones can be detrimental to our capacity to perform a demanding cognitive task. Physical separation from smartphones, by placing them in another room, appears to be the best solution to mitigate phone-induced brain drain (Skowronek et al., 2023; Ward et al., 2017).

2.5 ONLINE AFFORDANCES AND WELLBEING

The online space offers a range of unique features that are less readily available in the offline world (Orben et al., 2024). For example, editability – the ability to edit or change online content – provides an avenue to curate and carefully craft a social media profile of our desired self. Visibility enables us to influence the size and nature of our online audience. These features of the online world are especially appealing in adolescence, an intense period of identity exploration and formation (Yau & Reich, 2019). Adolescence is associated with heightened self-presentation, the intrinsic need to manage how others perceive us (Kross et al., 2021). While controlling how we present ourselves is limited in the offline world, social media provides a space to explore and prioritise self-presentation. Online self-presentation can be beneficial – self-esteem can significantly increase after individuals view their own social media profile (Gentile et al., 2012; Gonzales &

Hancock, 2011). While editability and visibility on social media allow users to experiment with different online identities, evidence suggests this is actually rare among young people (Petre, 2021). Rather, adolescents are more likely to present their authentic self, being conscious of offline social norms when engaging in online self-presentation (Yau & Reich, 2019).

Nonetheless, concerns have been raised about the negative impact of social media on identity. One longitudinal study found that more intense Facebook use predicted a decline in self-concept clarity over time (Appel et al., 2018). Social media usage can also induce negative feelings of self-worth through upward social comparison; i.e., viewing others as superior (Verduyn et al., 2017). Using data from over 37,000 people from 18 countries, Burke et al. (2020) found that those who engaged in more social comparison tended to spend more time on social media.

Online platforms quantify social comparison through numbers of friends or followers, 'likes' and reactions to posts. Children's sense of wellbeing can be tightly coupled with these online metrics. Receiving minimal likes or reactions on social media constitutes a form of social exclusion, which can damage sense of self and affective wellbeing (Timeo et al., 2020). A lack of, or negative, feedback on posted content can threaten the need for belonging, self-esteem and meaningful existence, subsequently promoting withdrawal from social interactions (Lutz & Schneider, 2021). Similar results arise among those whose messages are repeatedly ignored on WhatsApp (Lutz, 2023). Adolescents who receive fewer 'likes' on social media report strong feelings of rejection and more negative feelings and thoughts about themselves (Lee et al., 2020). The importance of 'likes' as a signal of popularity, appreciation and validation has been recorded in interviews with children in the United Kingdom (UK) (5Rights Foundation, 2021).

Overall, certain children appear to be more vulnerable than others to the negative effects of social media quantification. The negative impact of online quantification on wellbeing can be especially prominent among adolescents who have already been victimised by their peers at school (Lee et al., 2020). Those susceptible to depression and low self-esteem are also likely to be more exposed. Online social comparison is linked to depressive symptoms, particularly among females and those low in popularity (Nesi & Prinstein, 2015). Adolescents with less stable self-esteem can experience a stronger negative association between social media usage and self-esteem (Valkenburg et al., 2021), and those with lower self-esteem may use social media in a way that hinders social benefit, by making highly negative disclosures that elicit undesirable responses from others (Forest & Wood, 2012). While baseline self-esteem moderates the negative effects of social media usage, other characteristics can have a buffering effect. For example, Burrow and Rainone (2017) found that people with a greater sense of purpose in life were less vulnerable to the negative effects of social media on self-esteem.

In summary, unique features of the digital landscape, such as editability and quantifiability, may explain how online platforms negatively impact some children and adolescents. The socio-cognitive processes underlying different developmental stages, like identity formation during adolescence, may also amplify the risk of negative experiences online. Importantly, certain children appear more vulnerable online than others, such as those with depression, low self-esteem or prior experiences of victimisation.

2.6 ONLINE SAFETY RISKS

To facilitate communication between practitioners and policymakers, online safety risks have been classified according to 'the 4Cs': ***'content'*** risks (e.g., exposure to harmful or age-inappropriate material); ***'contact'*** risks (e.g., exposure to unsolicited contact from adults); ***'conduct'*** risks (e.g., cyberbullying); and ***'contract'*** risks (e.g., data harvesting and commercial marketing) (Livingstone & Stoilova, 2021). Harmful outcomes depend on the nature of these risks. The following section outlines the evidence base for each online risk, including children's own perspectives on each risk.

2.6.1 Content risks

To investigate the specific content children are exposed to online, researchers for the 5Rights Foundation charity in the UK created social media avatars of varying ages – profiles that mimicked the online activities of real children (5Rights Foundation, 2021). As a mirror of children's experiences, the avatars were rapidly and regularly exposed to harmful content and contact online. Despite having been registered as children, these avatars were recommended, and could easily search for, content related to eating disorders, suicide, self-harm and sexual images. Roblox, the most popular online gaming platform for children in Ireland (CyberSafeKids, 2024), has faced repeated criticism regarding harmful and age-inappropriate content (5Rights Foundation, 2024). Roblox is a multiverse platform in which users create and design virtual worlds. Despite being targeted primarily at children and having millions of child players worldwide, Roblox regularly exposes children to virtual worlds containing sexual, violent and extremist content (Kou & Gui, 2023). Consistent with this, children in the UK reported being exposed to a diverse set of online content risks, including sexual, violent, frightening, hateful, racist and drug-related content (Livingstone et al., 2014). These children reported sexual images and videos as the most concerning form of content online, particularly among those entering adolescence.

In Ireland, the NACOS (NACOS) (2021) found that 35 per cent of children reported seeing sexual images online at least monthly, and that 6 per cent saw sexual content daily or almost daily, with 15 per cent of 11–12 year olds in Ireland 'very upset' by seeing sexual images, compared to only 1 per cent of 15–17 year olds.

The same study reported that inappropriate and disturbing videos and photos ranked as one of the main causes of distress from online activities. In the UK, younger children (below ten years) have reported being more bothered by violent content, such as graphic content of real events on YouTube (Livingstone et al., 2014).

Children are exposed to an enormous volume of image-based content online. There is consistent evidence that viewing idealised and edited social media images negatively affects body image (Vandenbosch et al., 2022). Much research has focused on 'thinspiration' – image-based content that idealises and endorses bodily thinness. Just eight minutes of 'thinspiration' content on TikTok can be enough to worsen body satisfaction and increase internalisation of societal beauty standards (Blackburn & Hogg, 2024). Exposure to 'fitspiration', which refers to images that promote exercise and healthy living, also increases body dissatisfaction (Vandenbosch et al., 2022). These negative effects of thinspiration and fitspiration content on body satisfaction are evident for both males and females (Griffiths & Stefanovski, 2019). Poor body image is an issue that affects many children and adolescents, including in Ireland, where a recent estimate recorded that only 46 per cent of adolescents were satisfied with their bodies (Dooley et al., 2019). Body image concerns were a primary source of stress among 72 per cent of adolescents in Ireland (Chambers et al., 2017). Children often use social media tools to edit and 'improve' their appearance before sharing content online (5Rights Foundation, 2021). Body dissatisfaction in early adolescence predicts the emergence of later mental illness in both males and females (Bornioli et al., 2021). Thus, body dissatisfaction is a public health concern, which is likely exacerbated by image-based content on social media.

While online social networks can be a valuable source of information, a challenging issue is the spread of fake news, which spreads more rapidly and widely than real news (Vosoughi et al., 2018). Relative to adults, children are especially vulnerable to misinformation on the internet, given their less developed critical literacy skills (Howard et al., 2021). Children perform at chance level at differentiating fake news from real news online (Xu et al., 2022). Fake news has become even more difficult to differentiate with the advent of deepfake, hyper-realistic images and videos that have been manipulated using artificial intelligence (AI) applications (Westerlund, 2019). As children tend to form social and political opinions in their formative years, they can be targeted by convincing deepfakes spreading disinformation. Commonly used social media platforms by children, such as YouTube and TikTok, have been inundated with deepfakes (Cho et al., 2023). Deepfakes are evolving and improving rapidly, making it increasingly difficult to detect them (Passos et al., 2024). Most children aged 10–15 years struggle to detect deepfake images, especially of people (Ali et al., 2021).

Content recommender systems employ powerful algorithms to recommend potentially harmful content to young people. For instance, the term 'manosphere' refers to a collection of online communities that focus on issues related to men and masculinity (Over et al., 2025). The manosphere promotes misogynistic and anti-feminist rhetoric online, which contributes to online harassment and, in some cases, real-world violence (Ging, 2019). Although research in this area is still developing, some suggest that manosphere content may negatively affect girls' mental health by promoting sexism, and boys' mental health by reinforcing stigma around mental illness treatment (Over et al., 2025). Manosphere content is actively amplified through the recommender algorithms of social media platforms. After only five days on TikTok, the quantity of misogynistic content promoted to users increases fourfold (Regehr et al., 2024). TikTok users are exposed to increasing levels of misogynistic material over time under the guise of soft entertainment (e.g., memes and inspirational content), which has a potentially indoctrinating effect (Regehr et al., 2024). There is growing concern that boys and young men are particularly susceptible to content spread by high-profile manosphere influencers. Using social media avatars to simulate the experiences of 16 and 18 year olds on TikTok and YouTube Shorts, researchers found that manosphere content is quickly promoted to boys and young men, with the quantity of such content rapidly increasing over time (Baker et al., 2024). The algorithm on YouTube Shorts does not make any distinction between the underage and adult accounts in terms of the hateful, far-right content shared (Reset Australia, 2022). Beyond extremist content, TikTok's algorithmic recommender systems expose young people to 'rabbit holes' of mental illness, self-harm and suicide related content (Amnesty International, 2023). This demonstrates how the algorithmic architectures of online platforms generate content to maximise user engagement, often at the expense of young people's safety. Critically, content recommender systems operate opaquely, with only the platforms themselves fully understanding how these algorithms function.

2.6.2 Contact risk

In addition to content risk, children are at risk of experiencing potentially harmful contact online. One of the most commonly voiced fears by parents concerns who their children contact online (George & Odgers, 2015), and most parents in Ireland (59 per cent) are worried about their children being contacted by a stranger online (NACOS, 2021).

Evidence suggests that contact with strangers online is common. In a study by the 5Rights Foundation (2021), social media avatars of children were proactively contacted by strangers, many within hours of sign-up. These avatars were sent large volumes of unsolicited messages from unknown users, including adults. Children in Ireland reported being upset by verbal abuse and harassment while interacting with others in the chatrooms of multiplayer online games

(CyberSafeKids, 2024). The main concern for children relates to potential engagement in risky online communication, or becoming a target for abuse or exploitation (Livingstone & Stoilova, 2021). Among a nationally representative sample of adults in the United States (US), 22.5 per cent retrospectively reported experiencing online solicitation in childhood, which included unwanted sexual questions or act requests (Finkelhor et al., 2022). Online grooming with an adult perpetrator was experienced by 5.4 per cent of the sample. This demonstrates that a substantial proportion of young people experience online sexual abuse, which is more common among girls and older adolescents. Importantly, perpetrators of online sexual crimes against children are unlikely to be adults or strangers. Rather, most perpetrators are young people who are offline intimate partners, friends or acquaintances of the victim (Finkelhor et al., 2022; Sutton & Finkelhor, 2024). In contrast to the prevailing 'stranger danger' narrative, unknown adults are not the primary source of contact risks online. In general, children were more bothered by contact from other young people than from adults online (Livingstone et al., 2014).

Many children, and adults, use the internet to make friends and socialise. Approximately one in three children in Ireland use the internet to look for new friends and contacts (NACOS, 2021). Face-to-face meetings with online strangers are considered a major risk for children (Livingstone et al., 2011). In-person meetings with those encountered online is an infrequent occurrence (4 per cent of 9–10 year olds reported doing this), and more common among older adolescents (20 per cent of 15–17 year olds) (NACOS, 2021). Typically, young people meet another person who is approximately the same age and is in some way connected to them offline (e.g., a friend of a friend with a 'verifiable' identity) (Dedkova, 2015). When children in Ireland went on to meet these individuals face-to-face, most (80 per cent) were happy and considered it a positive experience (NACOS, 2021). This is consistent with evidence from other studies in Europe – it is rare for children to have a negative experience after meeting an online contact in-person (Dedkova, 2015). Nevertheless, whether interactions are through the online or offline world, there will always be safety risks when meeting someone new.

2.6.3 Conduct risk

Conduct risk concerns the risk of children being either victims or perpetrators of harmful peer-to-peer exchanges (Livingstone & Stoilova, 2021). Cyberbullying is a type of conduct risk, one that has received the most attention by researchers. Cyberbullying is the act of repeatedly and purposefully inflicting harm on others using electronic devices or the internet (Sabella et al., 2013). Cyberbullying might be considered more sinister than 'offline' bullying, as it is not restricted by time or space. Anonymity online also provides bullies with an opportunity to hide behind fake accounts. Of note, bullying is a multifaceted problem both online and offline. In Ireland, traditional offline bullying is still more prevalent than cyberbullying (Foody et al., 2017). Most youths who were cyberbullied were also victims of offline bullying (Li et al., 2022). Cyberbullying creates few new victims; rather, it is

mainly a new means of bullying existing ones (Wolke et al., 2017). A 2021 study in Ireland found that 11 per cent of 9–17 year olds had experienced cyberbullying in the previous year, with rates of cyberbullying highest among 13–14 year olds (18 per cent) (NACOS, 2021). Common forms of cyberbullying include exclusion from group chats, receiving hurtful messages and having photos or videos posted of oneself without permission (CyberSafeKids, 2024). Children in Ireland reported that cyberbullying was most often experienced on social media (for girls) and gaming platforms (for boys) (NACOS, 2021). Cyberbullying is associated with poor psychological outcomes, including behavioural and emotional difficulties, and lower self-esteem (Wolke et al., 2017). Both offline bullying and cyberbullying increase the risk of mental illness and suicide-related issues, especially when both forms of bullying are experienced at the same time (Li et al., 2022).

2.6.4 Contract risks

The final risk category is exploitation through harmful contracts or commercial interests, such as gambling or age-inappropriate marketing (Livingstone & Stoilova, 2021). Contract risks directly or indirectly connect children with digital providers. As previously mentioned, children's personal data are harvested and commercialised by digital companies. Children may unintentionally accept terms and conditions of use, which can create safety and security risks that children have no control over. In this regard, concerns have been raised about the 'datafication' of children, who unknowingly forfeit sensitive data and consent to digital surveillance (Mascheroni, 2020). In Ireland, children reported numerous incidents of personal data misuse, such as their device being infected by a virus (9 per cent), their passwords being stolen and profiles breached (5 per cent) and their location tracked (4 per cent) (NACOS, 2021).

Many online games involve winning or buying virtual items, which often enhance game performance. These virtual items can be traded between players, typically through within-game features, player-to-payer communication or external platforms. In Denmark, more than one in three children and adolescents had been victims of trade scamming through online gaming platforms (Kristiansen & Jensen, 2023). Younger children (below 14 years) were especially vulnerable to online trade scams (Kristiansen & Jensen, 2023). In Ireland, 4 per cent of children reported losing money through an online scam (NACOS, 2021). An additional 7 per cent reported spending too much money on games and in-app purchases. Children's risk of financial harm is escalated across many online gaming platforms. For example, Roblox has an in-game currency that is purchased for fiat currency and then exchanged for credit in virtual casinos (Kou & Gui, 2023). Multiple online gaming companies, including Roblox, are being investigated for profiting from financial exploitation of children (The European Consumer Organisation, 2024).

To increase profit, advertisements on social media are tailored to target children directly (5Rights Foundation, 2021). Children's profiles are regularly targeted by intense marketing of unhealthy food and beverages through social media (Bozzola et al., 2022). Relative to non-food or healthy food advertisements, unhealthy foods on social media evoke a more positive response from adolescents in Ireland, who spend more time viewing unhealthy food advertisements (Murphy et al., 2020). The widespread marketing of processed and nutrient-poor food to children has been linked with rising rates of obesity (Mazur et al., 2018) and diet-related disease (Kraak et al., 2020). In Ireland, nearly one in five children are overweight or obese (Kilduff et al., 2024). Additionally, alcohol brands have a strong advertising presence on social media and are accessible to children (Winpenny et al., 2014). Barry et al. (2016) found that profiles registered as those of children were presented with promotional material for alcoholic drinks. There is evidence that exposure to alcohol marketing directly causes underage drinking (Sargent & Babor, 2020). In response to this targeting of unhealthy advertisements, digital platforms have recently been banned from using targeted advertisements based on children's data under the *EU Digital Services Act* (European Commission, 2024).

CHAPTER 3
The challenges of parenting in a digital era

3.1 OVERVIEW

In today's digital age, parents face the complex challenge of harnessing the educational and developmental advantages that digital devices provide, while simultaneously safeguarding their children from the associated risks. The real struggle lies in finding effective strategies to maximise the benefits while minimising potential harms, thus ensuring that children can thrive in a safe and supportive digital environment.

'Digital parenting' was originally described as the parental techniques used to shield children from online dangers (Rode, 2009). This definition has since evolved to encompass not only how parents protect children in the digital sphere, but also how they empower them (Fidan & Seferoğlu, 2020). Digital parenting can be achieved through parental mediation, which refers to the strategies used by parents to intervene in their children's media use (Livingstone & Helsper, 2008). Commonly employed mediation strategies include active monitoring, rule setting, restriction via filters and controls, instructing how to be safe online and discussing online activity (Modecki et al., 2022). Parents often engage in multiple mediation strategies simultaneously, which become less intense as children age (Chen & Chng, 2016). In this section, we describe evidence regarding the most effective approaches to digital parenting.

3.2 SCREEN TIME RESTRICTIONS

In Ireland, 70 per cent of children aged 9–17 years report that their parents set rules about how long or when they are allowed online (NACOS, 2021). Numerous international guidelines have been published on appropriate screen times for children. In Ireland, it is recommended that: children below two years should not spend any time in front of screens (besides video calls); and children between two and five years should not spend more than one hour a day in front of a screen. No specific time restriction is recommended for children aged six years and over (HSE, 2024a). This converges with international screen time recommendations for children (WHO, 2019), although other countries often specify that children six years and older should be limited to two hours of screen time per day (European Commission, 2021). However, some argue that current screen time recommendations that impose hard limits broadly, across all forms of screen-based activity, are unrealistic and lack a strong evidence base (Blum-Ross & Livingstone, 2018). Parental screen time limits can be seen as a blunt instrument. Importantly, not all types of screen time are equivalent. International screen time guidelines are often included as part of general sedentary time guidelines

(European Commission, 2021; WHO, 2019), yet some forms of screen time offer the potential to engage in physical activity (e.g., through virtual or augmented reality games). Active video games, which require physical exertion to be played, are associated with improved physical health among adolescents (Staiano et al., 2017). Pokémon Go, a popular augmented reality mobile game, has been shown to promote meaningful improvement in physical activity among children (Khamzina et al., 2019; Lee et al., 2021). Rather than adhering to strict time limits, a more holistic recommendation for parents is to ensure screen time is balanced with physical activity and high quality sleep (WHO, 2019). While increased time online may raise the likelihood of negative exposure or risks (as outlined above), the discourse on screen time limits may distract parents from the importance of making judgements about the *content* their children engage with onscreen, the *context* in which this engagement occurs, and the *connections* formed online. These factors may be more closely linked to the positive or negative impacts of digital media.

3.3 TECHNICAL CONTROL

The National Advisory Council for Online Safety (NACOS) (2021) provides a snapshot of parental involvement in children's online activity. Restrictive mediation through technical control is adopted by most parents in Ireland. Around three-quarters of 9–12 year olds in Ireland say their parents use control features to track and filter their internet activity. As expected, this is lower among adolescents, with under half of 13–17 year olds reporting that their parents use technical controls.

Parents with greater digital skills are more likely to use parental controls (Stoilova et al., 2024). In recent years, many standalone, device, network and in-app parental control tools have been developed to promote children's safety online (Stoev & Sarmah, 2023). These software solutions, such as Google Family Link, Qustodio and Norton Family, allow parents to manage their child's digital device or service usage. Some parental control tools limit device usage time or specific app access. Others permit filtering of harmful online content like pornography. Using linked accounts, parents can easily monitor their child's interactions, browsing history and in-app purchases. While many tools track usage and set restrictions, some incorporate a location tracker to monitor children's physical movements. Use of parental tools increases parents' sense of control (Bertrandias et al., 2023).

Full transparency into children's online lives seems to come at a cost. Parental control tools can be counterproductive and increase tension at home. Ratings of control tools by children (aged 8–19 years) are significantly lower than ratings by parents, as children view these tools as overly restrictive and an invasion of their personal privacy (Ghosh et al., 2018). Overly restrictive parental control tools

hamper the parent–children trust relationship (Hartikainen et al., 2016). These concerns are echoed by parents, reporting that control tools heighten family conflict, erode trust, minimise child autonomy and intrude on their privacy (Stoilova et al., 2024). This is especially true during adolescence; a developmental period characterised by a growing sense of independence and need for privacy. This makes it hard to place much weight on the use of technical controls as a primary mediation strategy for parents, especially considering their negative impact on children's digital agency and privacy.

There are nevertheless elements of online control tools that may minimise adverse consequences. Adolescents rate control tools more positively when they afford more agency, by helping them manage their own unhealthy habits (Ghosh et al., 2018). For example, there are education control tools that prompt children to disconnect from devices when they have reached certain usage levels. This demonstrates how taking a child-centred perspective on the development of parental control tools may promote greater tool efficacy. Yet, parents in Ireland still prefer restrictive control features over these educational ones (Bertrandias et al., 2023).

Importantly, parental control tools may lull parents into a false sense of security. The most popular parental control tools can be easily bypassed by children (Stoilova et al., 2024), and are negatively reviewed for being unreliable and overpriced (Stoev & Sarmah, 2023). Technical mediation is associated with higher perceived but lower objective knowledge of children's online experiences, as parents that adopt technical controls are less aware of their child's risky online experiences relative to those that do not adopt these controls (Geržičáková et al., 2023). Among a large sample of adolescents in the European Union (EU), caregivers' use of internet filtering was found to not be effective for protecting young people from online sexual content (Przybylski & Nash, 2018). In Ireland, NACOS (2021) found that 40 per cent of children say their parents' efforts do not actually restrict what they do on the internet. Many parents in Ireland are in the dark about their child's online experiences – only 42 per cent of children say their parents know a lot about what they do online (47 per cent of girls and 38 per cent of boys). When children have negative experiences online, they may not disclose this. Some surveys find that only 45 per cent of children (8–12 years) report telling a parent/trusted adult when they are bothered by experiences online or experience cyberbullying (CyberSafeKids, 2024). Among adolescents from lower socioeconomic groups in Europe, one in three do not speak to their parents about their online experiences (Willems et al., 2023).

This lack of communication may explain why parents underestimate the risks that their children are exposed to online. Encounters with contact and conduct risk are greatly underestimated by parents in Ireland (NACOS, 2021). For example, where

28 per cent of children reported having contact online with someone they previously did not know, only 11 per cent of all parents were aware of this. Although 17 per cent of children were treated in a hurtful way online, only 8 per cent of all parents were aware of this. Among the 6 per cent of children who received unwanted sexual messages, just 1 per cent of all parents knew about it. Likewise, parents were less aware that their children were involved in misuse of their data, being cheated online and having their passwords stolen. This is a common issue, with numerous studies demonstrating parental misperceptions about their children's online activity, especially for harmful experience (Geržičáková et al., 2023; Nichols & Selim, 2022; Wisniewski et al., 2017). It is also common for adolescents not to tell their parents about their online risk experiences (Wisniewski et al., 2017).

3.4 ACTIVE MEDIATION

One strategy that may help parents to navigate digital parenting is active mediation. Active mediation broadly refers to how parents take an active role in supporting children's use of technology, by discussing ways to use devices safely while encouraging children to explore and learn new things online and supporting skill development (Chen & Chng, 2016). Active mediation by parents is associated with heightened perceived and objective knowledge of children's online activities (Geržičáková et al., 2023). Adolescents are more likely to disclose cyberbullying victimisation when parents adopt active mediation than when they adopt restrictive strategies (Cerna et al., 2016). Therefore, parents who create a supportive environment that facilitates open communication are more aware of their children's activities online.

When parents adopt active mediation strategies, children have greater personal agency and are better able to cope with distress (Chen & Chng, 2016). Active mediation is positively associated with adolescents' 'digital maturity', which refers to the ability to use digital technology to support personal developmental and societal integration (Koch et al., 2024). Less active mediation by parents contributes to lower digital maturity among adolescents from lower socioeconomic groups. Discussion-based parental mediation is associated with reduced likelihood of children befriending strangers on social media, while control-based restrictive mediation is associated with increased likelihood (Shin & Ismail, 2014).

A critical element of active mediation is parental warmth. In a review of parental mediation research, parental warmth was a stronger predictor of children's welfare online than restriction, surveillance or technical controlling (Elsaesser et al., 2017). The warmth dimension of parenting encompasses positive, supportive and affectionate interactions that make children feel supported and accepted. A positive mother–adolescent relationship protects against the negative impact of

social media use on body satisfaction (de Vries et al., 2019). Positive parenting and family dynamics protect against problematic gaming and internet use in adolescents, while negative parenting increases the risk (Nielsen et al., 2020). While parental warmth, interest and support, from the adolescent's perspective, is associated with lower excessive internet usage, higher parental overcontrol is associated with higher excessive internet usage, although the direction of this effect is not known (Faltýnková et al., 2020).

Active mediation is more common among parents from higher socioeconomic groups (Koch et al., 2024). When parents view themselves or their child as less digitally skilled, they favour restrictive strategies and are less likely to use active mediation (Livingstone et al., 2017). Similarly, when parents have more negative attitudes about digital media, they are less likely to adopt active mediation strategies and are more likely to use restrictive mediation (Wang et al., 2023). When children disclose online risk experiences, how their parents react is a major determinant of future disclosure. Specifically, communication breaks down when parents' reactions are overly judgmental to low risk experiences, which prompts children to not confide in their parents about later and more high risk experiences (Wisniewski et al., 2017). In fact, risk experiences that pose low levels of threat to adolescents can be beneficial by promoting conflict resolution and boundary setting (Wisniewski et al., 2016). Therefore, active mediation encourages children to share their experiences when there is open and non-judgmental communication before and after risk experiences occur.

In Ireland, evidence suggests that there is scope to increase active mediation. Almost three in ten adults have below basic digital skills (Eurostat, 2023). Digital skills tend to be lower among those who are older and have a lower household income (National Economic and Social Council, 2021). NACOS (2021) also recorded several relevant findings. In general, parents in Ireland have relatively low confidence in their knowledge of the digital world, with just 46 per cent saying it is true of them that they know lots of things about using the internet. There is a digital knowledge gap between generations, with only 44 per cent of parents in Ireland claiming to know more about the internet than their children. This likely reflects the rapid proliferation of new media platforms and apps, as well as trends, all of which emerge and evolve at an astonishing pace. Social media, in particular, is constantly shifting – platforms like TikTok, Snapchat and newer entrants such as BeReal or Threads gain popularity rapidly, often leaving parents with the challenge of learning about each one's features, risks and appeal. This constant evolution makes it difficult for parents to stay informed and actively engaged in their children's online lives. Without adequate digital literacy or up-to-date knowledge, it becomes increasingly challenging for parents to offer guidance, enforce boundaries or recognise potential risks.

While there is a trend towards increased active mediation among parents across Europe (Kalmus et al., 2022), parents in Ireland are still more likely to adopt restrictive strategies. Only 61 per cent of girls and 47 per cent of boys aged 13–17 years reported that their parents suggested ways to use the internet safely. Around half (55 per cent) of 9–12 year olds reported that their parents help them when something bothers them online. Other aspects of active mediation were much less common among Irish parents – less than half (44 per cent) spoke to their children about what they do online and only 27 per cent of parents encouraged their children to explore and learn new things on the internet.

While active mediation is important, a certain level of parental control and discipline is still warranted. Active mediation, in conjunction with monitoring and control strategies, is associated with children being more likely to initiate requests for parental support, whereas adoption of only restrictive strategies is negatively associated with child-initiated support (Livingstone et al., 2017). Children and adolescents in Ireland aged 10–17 years have higher digital skills when their parents employ a combination of active and restrictive mediation (Sciacca et al., 2022). To prevent cyberbullying, a supported strategy is to combine high-level active mediation with non-intrusive inspection, such as knowing what the child's social media accounts are, and low-level restrictive mediation (Chen et al., 2023). Regardless of age, children's outcomes are helped by a holistic approach to control that coincides with open and empathetic dialogue and respectful consideration of the child's perspective (Stoilova et al., 2024). Therefore, there is a need for parents to balance open communication with an appropriate level of control. For example, a major determinant of cyberbullying in Ireland seems to be how accessible children are online (CyberSafeKids, 2024). The risk of a child having a negative online experience is increased by their not having a private account, and by having friends and followers they do not know offline. Cyberbullying is more commonly experienced by children in Ireland who have friends or followers that they do not know (47 per cent vs 11 per cent), yet only one in three children (8–12 years) in Ireland maintain private online accounts. Nearly one in five children did not know the privacy setting of their account, indicating they are unfamiliar with protection settings. Therefore, ensuring a child's profile is set to private is a simple strategy for parents to mitigate the risk of cyberbullying.

Examining trends in Ireland, the proportion of parents that impose rules on digital devices is declining year on year, leaving many children to navigate the online world alone (CyberSafeKids, 2024). The vast majority of children (8–12 years) in Ireland are allowed to use devices unsupervised. Over one in three children (8–12 years) can go online whenever they want and nearly one in five have no rules at all around online engagement. Among children aged 12–14 years, the proportion who can go online whenever they want rises steeply to 61 per cent. Consistent with this, among a nationally representative sample of nine year olds in Ireland, 53 per cent reported that they are allowed to use the internet without their parents or another

adult checking what they are doing (McNamara et al., 2021). This is concerning, as children with no rules or supervision are more vulnerable to negative online experiences (CyberSafeKids, 2024). Much like the offline world, children's wellbeing is preserved when parents establish clear and consistent boundaries for online spaces. In line with the Same Rules Apply campaign by CyberSafeKids, discussions of online life can be normalised through a family agreement, with which the whole family complies. For example, most children (75 per cent of 8–12 year olds and 83 per cent of 12–14 year olds) in Ireland are allowed go online before bedtime (CyberSafeKids, 2024). Given the negative impact of nocturnal device usage on wellbeing (as outlined in section 1), establishing rules around nighttime access may be a useful approach for parents to implement at home, via a family agreement. Beyond setting ground rules, modelling behaviour is one way that parents can influence their child's online activities; this is discussed below.

3.5 INTERGENERATIONAL SCREEN TIME

Digital devices have permeated all aspects of family life. Much like their children, most parents spent a significant amount of time on their smartphones. In Ireland, 89 per cent of parents use their smartphones daily, with nearly one in five using the internet on their smartphone almost constantly, while over half report that the internet is too time consuming (NACOS, 2021). Nearly half (47 per cent) of American parents say that they spend too much time on their smartphones, with those in higher income groups being more likely to say this (Anderson et al., 2024).

There is evidence from multiple studies of intergenerational transmission of screen time from parents to children. Across device types (television, computer, smartphone and tablet), parents' screen time is a strong predictor of young children's screen time (Lauricella et al., 2015). When parents spend a greater amount of time on social media, children are significantly more likely to persistently request screen media (Domoff et al., 2021). Parents' excessive phone usage predicts a lack of control over their child's phone usage in the future, which in turn increases conflict about smartphones (Matthes et al., 2021). While both maternal and paternal screen time predict children's screen time, maternal screen time predicts children's usage more strongly than paternal screen time (Dempsey et al., 2024). Adolescents are significantly more likely to be addicted to the internet when their parents have internet addiction (Chemnad et al., 2023).

Parents' own behaviour is more important than the rules they set – if parents restrict and monitor their adolescent's internet access, but use it excessively themselves, adolescents are still at an increased risk of problematic internet usage (Liu et al., 2012). This demonstrates that parenting is ineffective when there is a discrepancy between what parents say and what they do, with children being more likely to follow the latter. Intergenerational transmission of screen time fits with

social learning theory, which posits that children learn through observation of modelled behaviour, especially from parents (Bandura, 1977). When parents model digital technology usage at home, children are likely to imitate this behaviour. Beyond modelling of device use, Bronfenbrenner's socioecological model specifies that high frequency activities in the family microsystem have a substantial influence on child development (Bronfenbrenner, 1979). Given the vast amount of time that parents in Ireland spend using digital devices, it is unsurprising that this behaviour teaches children that persistent device usage is normal and acceptable.

The pervasiveness of digital technology can distract individuals from their parental duties. Observational studies conducted at restaurants (Radesky et al., 2014), the playground (Hiniker et al., 2015; Lemish et al., 2020; Vanden Abeele et al., 2020) and the swimming pool (Wickens et al., 2021) reveal the high frequency at which parents use their phone when with their children. Nearly three in four parents were observed using their smartphones when dining out with their children (Radesky et al., 2014). Most parents (79 per cent) used their phones while with their children at the playground (Lemish et al., 2020). Most mothers (65 per cent) reported that digital devices intruded on playtime with their children (McDaniel & Coyne, 2016). Parents' phone usage heightens risks for children's physical safety and emotional wellbeing. An increased rate of injuries among young children has been directly attributed to parents being distracted by smartphones (Palsson, 2014). At the playground, one in four parents observed using their phones were completely disengaged from their child's activity (Lemish et al., 2020). When parents use their smartphone at the swimming pool, they are not able to provide sufficient supervision to ensure their child's safety (Wickens et al., 2021). In general, parents that are distracted by digital technology are less responsive and sensitive to their child's needs (Hiniker et al., 2015; Lemish et al., 2020; Radesky et al., 2014; Vanden Abeele et al., 2020). Parental phone usage is also associated with harsher (Radesky et al., 2014) and fewer verbal (Radesky et al., 2015) interactions with children. When parents were randomly assigned to use their phones frequently or infrequently during a family trip, frequent phone usage impaired parents' sense of social connection with their children (Kushlev & Dunn, 2019).

Ultimately, the time parents spend online may displace and decrease meaningful parent–child interactions (McDaniel, 2019; Modecki et al., 2020). 'Phubbing', or 'phone snubbing', is defined as the act of ignoring someone in a social setting in favour of using your phone (Ugur & Koc, 2015). 'Phubbing' has become a normative feature of modern communication (Chotpitayasunondh & Douglas, 2016). However, this form of social exclusion damages the integrity of personal (Roberts & David, 2016) and professional relationships (Roberts & David, 2017). 'Parental phubbing' is a term used to describe a situation in which parents who are distracted by a mobile device ignore their children (Hong et al., 2019). This is a common occurrence in families, as most adolescents (78 per cent) report that

interactions with their parents are disrupted by their parent's digital device usage (Stockdale et al., 2018).

During offline social interactions, the phone use of one party negatively impacts feelings of social connection, enjoyment and engagement (Barrick et al., 2022). Perceptions of 'phubbing' are asymmetrical, with individuals frequently exhibiting a 'blind spot' by underestimating the negative impact of their own phone use in social settings (Barrick et al., 2022). Children notice when their parents are distracted by devices, which leads to negative emotions (Myruski et al., 2018) and distress (Lemish et al., 2020). This generates a frustrating and rejecting home environment for children, from which children take solace in digital devices. Consistent with this, numerous studies indicate that 'parental phubbing' leads to problematic smartphone use among children (Geng et al., 2021; Liu et al., 2024; Niu et al., 2020; Wang et al., 2023; Zhang et al., 2021; Zhao et al., 2022). Moreover, it leads to problematic internet usage specifically by damaging the parent–child relationship (Hong et al., 2019; Liu et al., 2024; Niu et al., 2020). A dysfunctional parent–children relationship, as a consequence of 'parental phubbing', impedes children's self-esteem, which then leads to problematic internet usage (Hong et al., 2019). Additionally, it leads to children's subsequent problematic internet usage by increasing children's feelings of loneliness (Geng et al., 2021) and proneness to boredom (Zhao et al., 2022). These studies demonstrate that everyday intrusions and interruptions caused by digital device use can have a negative impact on the family microsystem.

Research on parents' device usage has important and practical implications for practitioners. Addressing parents' own digital habits may be a reasonable and family-focused strategy to improve children's wellbeing and reduce device usage. Given the disruptive power of parents' usage on children's wellbeing, parents may consider avoiding device use in the presence of their children, especially during family quality times (i.e., meals, playtime and bedtime) (Kildare & Middlemiss, 2017). Notably, the simple presence of devices can disrupt attention (Skowronek et al., 2023). Consequently, parents might consider entirely removing devices from shared spaces when focusing on their children. However, this may not be tenable, given the omnipresence of devices and complexity of internet addiction. Much like children, adults are highly susceptible to the compulsive design strategies of digital devices (as outlined in Chapter 2). Regardless of any effects of the devices themselves on an individual, excessive device use can affect the integrity of interpersonal relationships (Modecki et al., 2020). Educating individuals about the 'phubbing' blindspot may hold promise for reducing this behaviour (Barrick et al., 2022). Based on interviews with 709 young people across 27 countries, children wanted adults to be better informed about the benefits and risks of digital technologies, to improve their own digital literacy, and to model appropriate technology use for them (Third & Moody, 2023). They also urged parents and

carers to grant them more trust and independence in using digital technologies responsibly.

CHAPTER 4

Public health interventions to promote children's wellbeing online

4.1 OVERVIEW

Public health interventions for children are those strategies and actions designed to improve the health and wellbeing of children by addressing various factors that can negatively impact their health. These interventions aim to create a supportive environment that promotes the overall health and development of children, ensuring they have the best possible start in life. By recognising digital media usage as a significant factor in their health, interventions can be designed to enable children to benefit from digitalisation, while safeguarding their development, health and wellbeing. The Child Online Safety Toolkit by the 5Rights Foundation (2022) emphasises that children's rights can form the foundation of any policy affecting the lives of children. Children have rights that transcend the offline world into the online realm, including the right to privacy, to participate, to information, to play and to rest, and to not be exploited. The role of policymakers is to create a digital environment that protects children's rights. In this section, we explore two promising avenues for public health interventions: legislation to regulate digital technology companies; and the provision of parenting programmes.

4.2 LEGAL AND REGULATORY FRAMEWORKS

The dangers children face online are systemic, intricately woven into the digital landscapes curated by powerful corporate entities. While it may be possible to assist individual parents and children to navigate these landscapes better, these systemic threats also demand systemic solutions (Connolly et al., 2024). Legislation is essential to safeguard children in the online world, just as it is in the offline world, ensuring their safety is a guaranteed right, rather than something left to chance.

4.2.1 Age verifications

Digital technology companies have been likened to the tobacco industry, as both are profit-driven and have addictive potential (MacBride, 2018). While there are doubtless important differences between the two domains, such as the more clearly defined harms of tobacco, examining effective interventions for tobacco-related risks may inform solutions for protecting children online. For example, the US Surgeon General has called for health warning labels to be placed on social media platforms, like those that appear on tobacco products (Murthy, 2024). In Ireland, the minimum legal age to purchase tobacco products is 21 (Department of Health, 2024b). Like tobacco products, some governments are enforcing minimum age requirements for social media (Albanese & Rowland, 2024). Some surveys estimate that four in five children in Ireland aged 8–12 years have social media and

instant messaging accounts, despite most platforms having a minimum age requirement of 13 (CyberSafeKids, 2024). The rationale for age assurance tools is to protect children from adult content. Some platforms (Instagram and TikTok) now have age verification for older teen (16+) or adult (18+) accounts. However, 11–13 years is a particularly sensitive developmental window, during which social media use is associated with reduced life satisfaction and wellbeing in girls (Orben et al., 2022). The sensitive window for boys is 14–15 years (Orben et al., 2022).

Extending age verification to all new and existing accounts would mean that children under 13 are less likely to be able to access platforms that might harm their wellbeing. It would also stop the accounts of children under 13 created using self-declared age from being converted to adult accounts before they turn 18. There may be resistance from providers, who will be responsible for verifying age; however, this could be overcome by highlighting the reputational boosts involved for first movers, who may benefit from increased trust from parents. There may be difficulties in accessibility for 13 year olds who do not have identity documents to verify age. Some platforms (e.g., Instagram) have overcome this by offering options such as artificial intelligence (AI) facial analyses and social vouching from adult accounts. These could be checked and verified for accuracy; their existence shows a range of options might be available. Currently, the effectiveness of age verification methods for social media sites has yet to be assessed. Underage users might bypass these verification methods, potentially resorting to more underground channels.

4.2.2 Smartphone bans

In Ireland, smoking indoors has been banned since 2004 (HSE, 2024b). Similar to smoke-free zones, device-free spaces might be established. In Ireland and several other countries, mobile phones have been banned in schools. The banning of smartphones in schools is supported by evidence showing that even the mere presence of phones can disrupt attention and learning (Skowronek et al., 2023; Ward et al., 2017). However, there is still a lack of high quality research demonstrating that phone bans improve educational or wellbeing outcomes (Campbell et al., 2024). For instance, a cross-sectional study of secondary schools in England found no significant differences in students' levels of anxiety, depression, problematic social media use, sleep, physical activity, academic achievement or disruptive behaviour when comparing schools with restrictive phone policies versus those with more permissive ones (Goodyear et al., 2025). Of note, while phone and social media use was slightly lower during school time in schools with restrictive policies, there was no difference in usage when comparing weekdays with weekends. The restrictive policies therefore did not lower the overall time spent on phones or social media, which may explain the lack of effect. This study may suggest that phone bans do not significantly impact wellbeing or school performance, and that there may be a number of reasons for this; however, cross-sectional studies cannot track changes within individual schools over time

following bans. To truly assess the effectiveness of phone bans, high quality randomised controlled trials are needed. As it stands, the evidence to support smartphone bans in schools is inconclusive.

Arguably, banning young people from using social media or smartphones shifts the focus away from meaningful harm reduction. Critics of phone bans in schools argue that such measures overlook children's rights and avoid addressing the need to build digital resilience and literacy (Reed & Dunn, 2024). A total ban is seen as an 'all-or-nothing' strategy that may be less effective than equipping children with the skills to safely navigate online spaces. From this viewpoint, initiatives that promote digital literacy, critical thinking and social skills, supported by parents and educators, could eventually make bans unnecessary (Böttger & Zierer, 2024; McCoy & Marcus-Quinn, 2025). However, others argue that even without definitive evidence, the precautionary principle justifies school phone bans, given the potential for harm and the low cost of preventive action (Haidt, 2024b).

4.2.3 Standardised reporting mechanisms

Rather than a blanket ban on social media, governments can establish legal duties for digital companies to protect children. This involves enacting laws that require digital companies to protect children from harmful, age-inappropriate content and data exploitation. Under the EU's *Digital Services Act*, online hosting services are generally not directly liable for illegal and/or harmful content posted by users, provided that they act promptly to remove or disable access to such content once they become aware of it. Although the *Digital Services Act* mandates all hosting services to establish reporting mechanisms, these mechanisms vary widely across platforms and are not optimised to encourage user reporting. Recently, Meta has significantly scaled back content moderation across its platforms, ending its fact-checking partnerships and shifting toward a lighter, community-driven approach. Rather than proactively removing harmful content, Meta now focuses primarily on the most extreme violations, relying more heavily on user reports and community labelling to address harmful content. This rollback is expected to lead to a surge in harmful material – potentially up to 277 million additional harmful posts per year on platforms like Facebook and Instagram (Center for Countering Digital Hate, 2025).

Relative to proactive moderation, platform user reporting rates are low, with only a small proportion of users flagging harmful or illegal content (Center for Countering Digital Hate, 2025; Ofcom, 2023b). This is explained in part by behavioural barriers (e.g., lack of salience) that prevent users from initiating or fully completing the reporting process (Ofcom, 2023b). This low reporting rate may reflect behavioural barriers that prevent users from initiating or fully completing the reporting process, hindering platforms from acting on the information. For example, a randomised controlled trial by Ofcom (2023) in the UK demonstrated

that small changes to the design of reporting mechanisms on digital platforms can enhance safety and control over the online experience. Measures such as making the reporting option more overt (e.g., moving the option from behind an ellipsis to a flag icon) and prompting reporting in the comments function increase the likelihood of potentially harmful content being reported. Additionally, brief tutorials on how to use online platforms also increase reporting of harmful content (Ofcom, 2023c). These results suggest that a well-designed reporting mechanism, informed by behavioural science, and minimising barriers to reporting can effectively increase reporting volume. However, besides research by Ofcom, there is very limited research on the effectiveness of online reporting mechanisms or processes. More randomised controlled trials or quasi experimental studies are needed to determine how the reporting mechanism can be optimally designed to maximise reporting volume, particularly among children and adolescents.

In the long term, a standardised reporting mechanism, informed by behavioural science evidence, is expected to decrease the prevalence of harmful content as reporting becomes more effective. Greater recognition and usage of reporting mechanisms among users will foster proactive behaviour in reporting harmful content. Additionally, valuable data can be gathered for refining and improving reporting processes, enhancing overall online safety. Although users may initially struggle to adapt to a new reporting system, platforms can run awareness campaigns and provide clear, simple instructions on how to use the new reporting features. Educational initiatives targeting both children and adults can further ease this transition. However, the efficacy of reporting mechanisms is contingent on regulators enforcing legislation for platforms to respond to reported content.

4.2.4 Mystery shopping

Parents often remain unaware of the risks their children face online, with research consistently revealing a wide gap between children's actual digital experiences and what parents believe is happening. This disconnect highlights the urgent need for regulators to adopt more direct and effective oversight methods.

One promising solution is the use of simulated child accounts to audit platforms, an approach often referred to as 'mystery shopping'. By creating accounts that mimic those of real children, regulators can observe the online world through a child's eyes. This method has proven highly effective among researchers that have uncovered the extent to which underage users are exposed to harmful content, including violence, hate speech, misogyny, self-harm and sexually explicit material, even on platforms where these children are officially registered as underage (5Rights Foundation, 2021; Baker et al., 2024). Gaming platforms, in particular, have been identified as significant sources of inappropriate and dangerous content (Kou & Gui, 2023).

Although not yet used in a regulatory context, mystery shopping is a well-established enforcement tool in other sectors. In Ireland, for example, the Competition and Consumer Protection Commission and the Regulator of the National Lottery regularly use it to ensure retailers comply with age-restricted product laws. Extending this proven strategy into the online world, simulated child accounts would function as digital mystery shoppers, testing whether platforms are genuinely protecting young users.

Publishing the findings from these investigations would have multiple benefits. First, it would provide parents and children with credible, accessible information about the risks associated with different platforms. Second, it would create market pressure for platforms to clean up their environments and compete on safety. Rather than replacing content moderation, this approach would complement it, highlighting whether platforms' algorithms and enforcement systems are actually keeping children safe.

The public impact of this kind of transparency can be seen in other areas. For example, the Food Safety Authority of Ireland's reports on hygiene violations routinely make headlines and encourage higher standards across the food industry. Exposing the risks on digital platforms through mystery shopping could spur similar widespread improvements. Beyond monitoring, these simulated accounts could also report harmful or illegal content they encounter directly. Just as food products must disclose ingredients and meet safety standards, online platforms should face comparable scrutiny. Mystery shopping offers a powerful, practical tool to achieve this.

4.2.5 Using behavioural science to inform 'Child Rights by Design'

Importantly, online safety will not be guaranteed through purely retrospective reporting of harm. Instead, digital products and services need to be proactively designed to prioritise children's privacy, safety and rights. This preventative, child-centred strategy is detailed in the 'Child Rights by Design' guidelines (Livingstone & Pothong, 2023). A core principle of Child Rights by Design concerns the inclusion of safety-by-design measures, such as the detection and removal of harmful, age-inappropriate content before it reaches children. This will protect children from the outset and relieve the burden of reporting exposure to harmful content after the fact. Rather than being merely an ethical concept, child-centred design can be legally enforced (5Rights Foundation, 2022) and incorporated into the research and development stage for digital services and products.

In response to societal concerns, social media platforms have themselves taken some action to safeguard young people online. For example, TikTok now sends young users a notification when time spent on the platform exceeds one hour (TikTok, 2024). 'Teen accounts' on Instagram have a similar feature and also mute

notifications at night (Instagram, 2024). Yet, these innocuous actions will likely be overshadowed by the powerful design features used to make these platforms addictive (see Chapter 2). As such, safeguarding actions taken by social media companies are considered by some to be a form of 'screenwashing', whereby companies pretend to be more socially responsible than they actually are (Koning et al., 2024).

Given that we cannot depend on digital companies to act in opposition to their own commercial interests, governments can consider ways of limiting the playing field of digital technology companies. For example, legislating against predatory design features, like infinite scrolling, automatic play and streaks, might minimise the addictive potential of these platforms. Behavioural science trials have demonstrated that small changes to the 'choice architecture' of digital platforms can enhance safety and control over online experience. For example, the provision of harm alerts, alongside the option to skip videos instead of them autoplaying by default, significantly increases the chances of users avoiding potentially harmful content (Ofcom, 2023b). Rather than the default position being exposure to all social media content, individuals are more likely to reduce sensitive content exposure when this is an option at sign-up (Ofcom, 2024b). Replacing existing machine learning algorithms with reverse-chronological ordering of content (so that the newest material appears first) significantly reduces time spent and activity on social media (Guess et al., 2023). Children are significantly more likely to engage with user support materials that are more salient and that incorporate positive language (Ofcom, 2024c). Presenting information to children in a gamified format can enhance their knowledge of appropriate behaviour on social media and reduce harm risks (Ofcom, 2024d). Using these insights from behavioural science, legislation might mandate redesigning digital platforms to promote more positive online experiences for children.

4.2.6 Platform data accessibility

Another potential legislative approach is the regulation of access to very large online platforms and search engines (VLOPs/VLOSEs) data. Under Article 40 (4–11) of the EU's *Digital Services Act 2022*, researchers vetted by Coimisiún na Meán can apply to access data of VLOPs/VLOSEs to conduct research that contributes to the detection, identification and understanding of systemic risks associated with online platforms. There may be an argument for a standardised format to ensure data are usable. This may be best realised under Article 40(12) provisions, whereby VLOPs/VLOSEs shall provide access to publicly accessible data, often through application programming interfaces (APIs). Under Article 40(3), online platforms are also obliged, upon request from Coimisiún na Meán, to explain the design and functioning of their algorithmic systems, if necessary to monitor and assess compliance with the *Digital Services Act*, as per Article 40(1). Both the European Commission and Coimisiún na Meán have a role to play in the supervision and enforcement of these provisions of the *Digital Services Act*.

4.2.7 Advancements in digital technology: Considering AI

Given the rapid and ongoing advancements in digital technologies, it is crucial that legal frameworks remain dynamic and forward-looking, capable of addressing both current and emerging risks. AI, in particular, presents a unique set of challenges and opportunities that demand careful regulation. Policymakers can consider not only how AI systems are designed and deployed, but also who they impact. Unlike adults, children may lack the maturity, digital literacy and critical thinking skills required to navigate or question the decisions made by AI systems. This makes them more vulnerable to harms such as algorithmic bias, data exploitation and exposure to inappropriate or misleading content. Just as online environments have gradually moved toward child-centred design principles, AI systems must be developed with children's best interests in mind (UNICEF, 2021). To support this, policies can mandate child-specific impact assessments, accountability mechanisms and the use of sandbox environments – safe, controlled spaces where child-focused AI applications can be tested and refined before wider deployment. These measures help ensure AI technologies support, rather than compromise, children's rights and wellbeing. The European Union (EU) *Artificial Intelligence Act 2024* acknowledges this by explicitly identifying children as a vulnerable group, setting an important precedent for how AI governance should be shaped globally.

4.3 PARENTING INTERVENTIONS

Until legislation to regulate technology companies proves effective, parents still hold power to shape a safer online world for their children. Parents are often the first, last and best line of defence for their children. By taking proactive measures, parents can minimise the dangers that online risks pose for their children. Although there is limited evidence for parenting interventions specifically aimed at online safety, those targeting other health-related behaviours have proven to be effective. Returning to the tobacco analogy, parental nicotine dependence is a strong predictor of adolescents' lifetime smoking (Kandel et al., 2015). This strong link between parental and adolescent smoking is largely explained by a role-modelling effect involving socialisation by parents and imitation by adolescents. When parents quit smoking, their children's risk of smoking significantly decreases (Bricker et al., 2003). From a public health perspective, interventions that reduce parental smoking can have an intergenerational benefit. Smoking cessation interventions tailored to parents are modestly effective at reducing parental smoking (Scheffers-van Schayck et al., 2021). Provision of smoking cessation assistance in paediatric care is promising, as it would occur early in the child's life and potentially reduces smoking onset (Rosen et al., 2012). Applying this approach to parental device usage, educating parents in paediatric settings about the intergenerational transmission of screen time might reduce both parents' and children's screen time.

High levels of parent–child connectedness and good quality general and substance-specific communication are protective against adolescent tobacco, alcohol and substance use (Carver et al., 2017). The quality of communication is amenable to change through family-based interventions. The most effective family-based interventions for preventing tobacco, alcohol and drug misuse in children are those that include active parental involvement (Petrie et al., 2006). Rather than just focusing on the issue of substance abuse, effective interventions include strategies that promote parental engagement, strong family bonds and conflict management. For example, the Strengthening Families Program is an evidence-based intervention for preventing substance use among children and adolescents (Kumpfer et al., 2020). During interactive sessions with their children, the Strengthening Families Program guides parents on how to communicate empathetically, provide appropriate rewards, set boundaries and strengthen family cohesion. Translating this evidence to digital media usage, parenting programmes that encourage open, respectful and constructive communication might improve children's safety online. While interventions for substance misuse are geared more towards prevention, the goal of digital media interventions is safe usage, rather than eliminating usage altogether.

Navigating the internet can be challenging for parents. Much like online activities, parents often feel uncomfortable or inadequately informed when discussing sexual topics with their children. A 2020 study found that, at age 13, most young people in Ireland had not spoken to their parents about sex or relationship issues (Nolan & Smyth, 2020). By age 17, over 40 per cent had still not discussed this with their parents. Whether and how easily young people discuss sex and relationships with their parents is dependent on the quality of the parent–child relationship. Those who discussed sexual relationships with their parents at 13 were more likely to report safe sex practices. Therefore, supporting parents to develop positive communication skills can have wider benefits for their child's sexual health and wellbeing. Consistent with this, a parenting programme that encouraged parents to better communicate with adolescents about sexual topics had immediate and long-term positive effects on parent–adolescent communication about sexual health (Schuster et al., 2008). While abstinence-only education is ineffective, educating adolescents about safe sex practices reduces rates of teenage pregnancy and disease risk (Kohler et al., 2008; Stanger-Hall & Hall, 2011). As a parallel, developing parenting programmes that give parents confidence to talk to their children about online safety, rather than simply encouraging their children to avoid the internet, may enhance children's wellbeing online.

In Ireland, Parents Plus offer group-based interventions in both clinical and community settings to support parents dealing with child-focused issues (Carr et al., 2017). One such intervention, the Healthy Families Programme, helps parents cultivate healthier habits, including managing digital device usage (Parents Plus, 2024). The National Parents Council in Ireland provides a variety of training

programmes to support parents. This includes the Internet Safety Programme, which teaches parents how to help their child be a responsible and safe internet user (National Parents Council, 2024). Webwise, the Irish Internet Safety Awareness Centre, offers online resources for parents, including booklets, checklists and videos, which cover a wide range of internet safety guidance (Webwise, 2024a). Webwise promotes Safer Internet Day, a public campaign that aims to raise awareness about safer internet use of online technology, especially among young people (Webwise, 2024b). Every year, schools and organisations throughout Ireland host events to celebrate Safer Internet Day. While campaigns, resources and programmes that promote internet safety are readily available, their direct impact on the digital habits of families in Ireland remains uncertain. More research, including randomised controlled trials, is needed to evaluate their effectiveness.

Schools also play a role in educating parents and guardians about both the risks and the opportunities that new technologies present. Research indicates that parents predominantly prefer to receive information about online safety through their child's school (NACOS, 2021). Therefore, it is possible that parenting programmes might be more accessible to parents when made available through the school system.

Relying solely on schools is not enough, however. Reaching as many parents and guardians as possible requires using multiple channels. Alternative locations for parenting programmes may include workplaces (Schuster et al., 2008) or online spaces (Spencer et al., 2020). Public spaces including libraries, health centres, pharmacies and shopping centres can also serve as accessible venues for sharing internet safety information. However, barriers that prevent access to parenting programmes represent an important consideration. For instance, lower socioeconomic status is linked to decreased participation in parenting interventions (Berry et al., 2023). This demographic warrants special consideration. Children from lower socioeconomic backgrounds tend to spend more time online (Bohnert & Gracia, 2021, 2023), and parents from lower socioeconomic backgrounds tend to have relatively lower digital skills (National Economic and Social Council, 2021) and are less likely to adopt active mediation strategies (Koch et al., 2024). Parental attendance of training programmes across socioeconomic groups might be bolstered when there is flexibility to meet the needs of parents and individuality to meet to the needs of each child (Berry et al., 2023). In one Irish town, a 'no smartphone' code was implemented across primary schools, whereby parents voluntarily agreed not to buy their children smartphones until they entered post-primary school (The Guardian, 2023). This collective agreement led to widespread parental pledges, all aimed at reducing smartphone use among young students. Similar initiatives have been reported in the UK (Smartphone Free Childhood, 2025) and Spain (The Guardian, 2025), where thousands of parents

have collectively agreed to delay their children's smartphone ownership. These grassroots movements across Europe reflect a growing parental effort to postpone children's exposure to smartphones, with the goal of promoting healthier development and reducing the risks associated with early digital device use. Such collective action, supported by schools or governments, can help overcome the so-called 'collective trap' (Bursztyn et al., 2024), whereby individual parents feel pressured to allow early smartphone access because they believe others are doing so. By acting together, parents can shift social norms away from early smartphone ownership.

CHAPTER 5
General conclusions

The promotion of children's safe and balanced engagement with the digital world requires an interconnected approach, with roles to be played at the levels of the individual, the family and society. Drawing on Bronfenbrenner's ecological systems model (1979), Figure 5.1 illustrates the multiple levels of influence shaping a child's experience in the digital world. Within its inner circle we find the child, for whom use of a digital device serves as both a boon and a bane. Digital devices put the world at our fingertips and rarely leave our side. For children, digital technologies are important for realising their rights. Digital technologies often provide an avenue for children to socialise, learn, explore, create, seek support and play. However, the omnipresence of the internet means its effects are varied and nuanced, making the question of its impact on wellbeing more about the nature of that impact rather than its existence. Commercial interests often overshadow children's safety in the digital realm, leading to design choices that promote problematic internet usage. The unique features of digital platforms, such as the ability to edit and quantify interactions, can negatively influence children and adolescents, especially during more sensitive developmental stages and for more vulnerable children. Children may encounter a range of risks online, such as exposure to inappropriate or harmful content, interactions with strangers or malicious individuals, engaging in risky behaviours, and falling victim to unfair or deceptive contractual agreements. As reported by children, risk exposure is frequent and often results in distress and upset. While not every child will experience these risks, many do, implying inadequate protection against potential exposure.

The next circle of Figure 5.1 concerns the sphere of parental influence – the closest system of influence for children. Parents play a paramount role in ensuring children's safety online. Parents face an eternal tension between fostering their child's autonomy while protecting their safety, both offline and online. The most effective way for parents to influence their children's online behaviour is by modelling appropriate behaviour and healthy digital habits. To better support their children's online activities, parents can employ various mediation strategies. Overreliance by parents on technical controls can be counterproductive and harm the parent–child relationship. Better outcomes for children occur when parents normalise communication about online activities. Active, discussion-based mediation fosters trust and cooperation, encouraging children to share their experiences. This is especially relevant for parents in Ireland, where the low frequency of discussion-based mediation contributes to parents underestimating and children underreporting negative online experiences. Importantly, this problem is greater for parents with lower digital skills or from lower socioeconomic groups, who are less likely to adopt active mediation strategies. Alongside active

mediation, setting rules and establishing boundaries may mitigate the risk of negative online experiences. Rules need to be clear yet adaptable, especially as children grow and seek more independence. These conclusions align with the voices of children.

The outermost layer of Figure 5.1 represents the role of public health interventions, which shape the broader environment influencing children's online experience. There is a collective responsibility to protect and promote children's rights online as well as offline. The coordinated efforts of parents, schools, digital technology companies and governments are required to ensure children's online safety. The perils that children encounter online are not random but are woven into the fabric of the digital world. Online dangers are systemic, embedded within the algorithms and platforms that shape our virtual experiences.

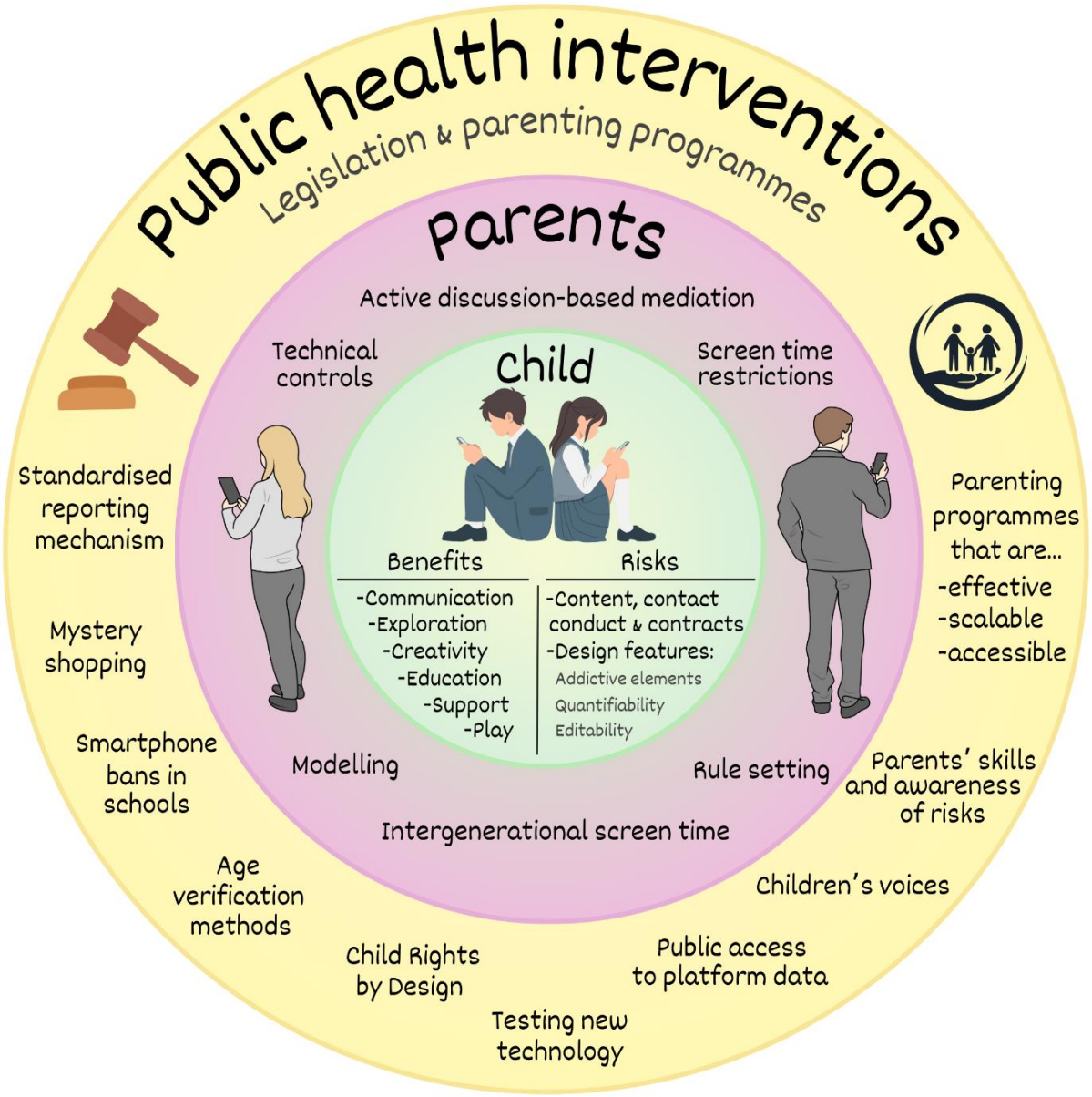
Major challenges currently faced by policymakers include how to create effective legislation and the power of commissions to regulate digital technology companies. First, robust age verification mechanisms can be established to prevent underage children from accessing platforms that are not appropriate for their developmental stage. Without this foundational safeguard, children are easily exposed to harmful content and environments. Second, smartphone bans in schools are gaining traction in several countries as a way to create focused learning environments, and reduce exposure to harmful content and online peer pressures during school hours. While this measure may be debated, banning smartphones raises critical questions about how and when children access digital technologies and the balance between protection and autonomy. Third, the requirement for platforms to implement standardised reporting mechanisms for illegal and harmful content can enable swift action, which is legally required in response to reports, and provide children and parents with clear avenues for redress. In parallel, mystery shopping techniques, using simulated child accounts to audit platforms, can provide vital insights into the content and contact children are actually exposed to, rather than relying on self-reported data or platform assurances. Importantly, digital product developers can embed Child Rights by Design to ensure that platforms actively support children's developmental needs and rights rather than exploit vulnerabilities. These design principles, informed by behavioural science evidence, can guide decisions about everything from user interface and notifications to algorithms and privacy settings. To evaluate the real-world impacts of these interventions, objective platform data must be accessible to independent researchers and regulators. Without access to platform-level data on usage patterns and algorithmic behaviour, it is nearly impossible to conduct evidence-based assessments or to refine policy and intervention strategies. Finally, these efforts must be situated within the broader context of rapid technological advancements, particularly in artificial intelligence (AI), which introduce new capabilities and risks at an unprecedented pace. As newer technologies introduce unique and increasingly complex risks to child safety and rights, it becomes all the

more imperative that they undergo thorough testing in controlled, experimental environments prior to widespread release, to ensure they adhere to the highest standards of safety and child protection.

Support for parents has become ever more crucial, as they try to navigate and shield their children in this complex digital landscape. Although there are programmes and resources available to parents in Ireland, it is unclear whether they are being widely utilised or considered helpful by the parents. There is a growing need for research into the effectiveness, accessibility and scalability of parenting interventions aimed at promoting children's wellbeing online. Future research may elucidate the active ingredients underlying parenting interventions. For example, effective interventions may be those that incorporate modules addressing parents' device usage, parent–child communication, parents' confidence, skills and knowledge about children's usage and children's ability to cope with negative online experience. Yet, individual-focused solutions in isolation are not going to be effective at protecting children. The provision of supports to parents needs to be complemented by regulation that improves the safety of the online environment with which children are engaging.

Across the globe, children assert their right to a secure digital environment, free from harm (Third & Moody, 2023). Yet, there is a disconnect between the online realities children face and the perceptions held by their parents. This disparity underscores the necessity of amplifying children's voices in the formulation of national policies. By listening to their experiences, strategies may better reflect the authentic challenges and needs of our youngest digital citizens.

FIGURE 5.1 SYSTEMS INFLUENCING CHILDREN'S WELLBEING ONLINE



TEXTBOX 5.1 SUMMARY OF FIGURE 5.1: SYSTEMS INFLUENCING CHILDREN'S WELLBEING ONLINE

This figure illustrates the multiple levels of influence on a child's digital experience. Each level comprises various factors that have the potential to influence a child's wellbeing. The centre of the model (the blue sphere) concerns the child themselves; we find them here using a digital device, which can be both beneficial and harmful. Digital technologies enable socialisation, learning, exploration, creativity, support-seeking and play, but also pose risks, such as exposure to inappropriate content, interactions with strangers, problematic behaviours and deceptive contracts. Commercial interests often overshadow children's safety, leading to design features (addictive elements, quantifiability and editability) that can negatively impact children's wellbeing.

The next layer (the pink sphere) represents parental influence. Parents can support their children's online activities through mediation strategies like screen time restrictions, technical controls, rule setting and active mediation. Overreliance on technical controls can harm the parent–child relationship, while active discussion-based mediation, rule setting and the modelling of appropriate behaviour may yield better outcomes. Parental phone snubbing ('phubbing') can lead to problematic internet usage among children.

The outermost layer depicts public health interventions shaping the broader environment (yellow sphere). To create safer digital spaces for children, policymakers can consider regulations such as age verification methods and standardised content reporting. Complementary strategies such as mystery shopping and data access for independent researchers can provide critical insights into children's actual online experiences and how platforms truly operate. While bans on social media and smartphone usage are being explored in some countries, restricting digital access may impinge on children's rights. Innovators can adopt Child Rights by Design, informed by behavioural science research, to uphold children's rights online. Given the rapid pace of technological advancement, new technologies can be evaluated in controlled, experimental settings before widespread release to ensure they meet safety and child protection standards.

There is an increasing demand for research on the effectiveness, accessibility and scalability of parenting interventions. Effective parenting programmes might include modules that improve parents' skills and knowledge regarding their children's digital usage. Incorporating children's voices at every stage of policy development may enhance the creation of effective changes that improve children's wellbeing in the digital world.

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APPENDIX A

Methods

This review adopts a narrative approach rather than a systematic one, due to the broad and exploratory nature of the topic. A narrative review allows for a more flexible and comprehensive discussion of diverse perspectives and sources, which is essential for capturing the complexity and nuances of how digital devices impact parenting and children's wellbeing. Unlike systematic reviews, which focus on predefined research questions and strict inclusion criteria, a narrative review facilitates the integration of interdisciplinary evidence and theoretical insights necessary for addressing this multifaceted issue (Greenhalgh et al., 2018).

Literature search and selection: Articles were sourced from reputable academic databases, including PubMed, Google Scholar and JSTOR, ensuring access to peer-reviewed research spanning disciplines such as psychology, education, sociology and public health. This comprehensive search strategy was designed to capture a wide range of studies that provide insights into the various ways digital devices influence parenting practices and children's developmental outcomes.

Grey literature: In addition to academic sources, grey literature was reviewed, including reports and publications from government departments, non-governmental organisations and charities actively engaged in online safety. These sources were invaluable for providing context-specific examples and practical implications that are often not covered in academic research.

Non-academic sources: The inclusion of non-academic sources, such as news articles and policy briefs, was justified by their ability to provide up-to-date information, context-specific examples and practical implications that enrich the academic discourse. These sources were particularly valuable for exploring rapidly evolving issues and capturing real-world applications of research findings. Non-academic publications were selected based on their credibility, relevance and alignment with the review's objectives.

All sources, whether academic or non-academic, were critically appraised to ensure they are reliable and contribute meaningful insights to the review. This process involved evaluating the methodology, relevance and potential biases of each source to ensure a balanced and comprehensive understanding of the topic. By including both academic and non-academic sources, this review provides a rich and contextually relevant discussion that can inform future research, policy and practice.

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Economic & Social Research Institute

Whitaker Square
Sir John Rogerson's Quay
Dublin 2

Telephone: +353 1 863 2000
Email: admin@esri.ie
Web: www.esri.ie

An Institiúid um Thaighde Eacnamaíochta agus Sóisialta

Cearnóg Whitaker
Cé Sir John Rogerson
Baile Átha Cliath 2

Teileafón: +353 1 863 2000
Ríomhphost: admin@esri.ie
Suíomh Gréasáin: www.esri.ie