Educational Research and Innovation

Educating 21st Century Children

EMOTIONAL WELL-BEING IN THE DIGITAL AGE

Edited by Tracey Burns and Francesca Gottschalk

OECD

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OECD
BETTER POLICIES FOR BETTER LIVES

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Foreword

Modern children's lives have changed on a number of measures, often for the better. They have an array of digital tools to creatively express themselves. There is increased awareness of mental health issues, and support from loved ones is often only the touch of a button away. But children are also facing new challenges. They are reporting less sleep and more stress. Many children have a digital footprint before they can consent to it – sometimes even before they are born. Old threats take on new complexions in the digital world, like cyberbullying.

Education must evolve with our societies, anticipating change rather than simply reacting to problems. The first decades of the 21st century are the intersection of a turn of a millennium and rapid technological change. Although people tend to be wary of change, digital tools have fundamentally transformed our lives. There is a need to understand what has changed for our children. It is equally important to determine what has not changed, for example the importance of strong and healthy relationships with family and friends.

The Centre for Educational Research and Innovation (CERI)'s 21st Century Children project focuses on the nature of modern childhood. It asks the questions: what does life look like for children in the digital age? What does this mean for education? How can teachers and schools work together with parents and communities to protect and guide children while still allowing them to be children, and learn by making mistakes?

This report is part of a series that examines modern childhood. This volume focuses on the intersection between emotional well-being and digital technologies. It explores how parenting and friendships have changed in the digital age. It examines children as digital citizens, and how education systems can support them to take advantage of online opportunities while minimising the risks. It ends with a look at how education can foster digital literacy and resilience, highlighting the role of partnerships, policy and protection.

Many of these trends, especially the digital ones, are a continuously moving target, and reports such as this can become quickly outdated. This volume provides an important snapshot at this point in time. The work of education systems around the world is cut out for us as we try to stay ahead of, or at least on top of, the curve. We owe it to our children and youth to separate fact from fiction, and help support them to get the best start in life.

This publication was edited by Tracey Burns and Francesca Gottschalk from the OECD Centre for Educational Research and Innovation (CERI). Tracey Burns conceptualised this volume and leads the 21st Century Children project. Francesca Gottschalk was responsible for coordinating the contributions of the external experts. Individual Secretariat chapters were authored as follows: Tracey Burns (Chapters 1, 4, 12, 13, 14), Francesca Gottschalk (Chapters 2, 11, 12), Liam Bekirsky (Chapter 3), Quynh Nguyen (Chapter 4) and Alejandro Paniagua (Chapter 13). Within the OECD Secretariat, Alison Burke, Sophie Limoges and Leonora Lynch-Stein contributed to the final stages of preparation for publication.

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Tracey Burns and Francesca Gottschalk

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Executive summary

What is the nature of childhood today? Older, better educated parents are increasingly advocating for their children and playing an active role in their education. New technologies empower children's self-expression, information seeking and socialisation, and in times of need, help could be just a phone call – or WhatsApp message – away. On a number of measures, modern children's lives have clearly improved: better health care, public safety, and support for their physical and mental well-being.

At the same time, there are signs of new stresses. Children in the 21st century are reporting more anxiety, including from increased pressure to excel in an ever more competitive educational environment. Technologies that help parents stay connected to their children also make it more difficult to monitor children's behaviour once they have their own devices. And the omnipresent nature of the digital world means that risks like cyberbullying follow children and youth from the school yard into their homes.

There is an urgent need to examine the lives of modern children and better understand what this means for education. How can teachers and schools work together with parents and communities to protect and guide children while still allowing them to be children, and learn by making mistakes? This volume explores the potential of education systems to proactively adapt and develop along with our societies, focusing on children's emotional well-being and use of digital technologies.

Part I: Setting the stage: 21st century children

Part I explores trends in digital technology use and emotional well-being. Chapter 1 provides an overview of the volume, looking at the concept of 21st century children and identifying what has changed and, equally importantly, what has not. Chapter 2 examines the increasing use of digital technologies by children who go online at younger ages. It looks at high priority policy challenges, such as digital citizenship and cyberbullying, as well as the interconnections between those challenges. Chapter 3 covers trends in emotional well-being indicators and key protective and risk factors underlying these trends. It also looks at high priority policy challenges such as anxiety, stress and mental illness, as well as the interconnections between them.

Part II: Children's relationships in the 21st century

Part II focuses on children's relationships and the supporting players in their lives, from parents to peers. Chapter 4 reviews the literature on the importance of positive and supportive relationships and provides an overview of parenting styles and research on friendships, both real and virtual. Chapter 5 takes a closer look at online and offline friendships. Are online relationships replacing offline ones or are they improving friendship networks and empowering disadvantaged groups?

Chapter 6 explores digital parenting practices. The example of sharenting (the practice of sharing information about one's children on social media) is highlighted and the chapter

argues that such practices can not only jeopardise children's rights and privacy, they can also negatively affect both the parent-child relationship and child well-being. Chapter 7 examines how global trends such as climate change, forced displacement, increasing individualism and digitalisation can affect adolescent development, relationships and mental health.

Part III: Online opportunities and risks: Ensuring child well-being

Part III of this volume examines the complex interplay between online opportunities and risks through the lens of child well-being. Chapter 8 reviews the research on children's time online and highlights the lack of conclusive evidence of the impact of digital technology on children, calling for a more careful consideration of methodological limitations in research and policy. Chapter 9 examines disparities of digital outcomes against the backdrop of social inequalities, paying special attention to the most disadvantaged – young people not in employment, education, or training. Finally, Chapter 10 reports from the renewal of the 2012 OECD Recommendation for the Protection of Children Online. It highlights the dynamic nature of online protection as a public policy and legislative area and provides an overview of recent regulatory responses across OECD countries.

Part IV: Children as digital citizens: Policies and partnerships to foster digital literacy and resilience

Part IV explores children as digital citizens, highlighting examples from countries to address many of the challenges laid out in the preceding sections. Chapter 11 profiles the important efforts countries have made to close digital divides and strengthen digital literacy while also taking care of student well-being, including policies on screen time. Chapter 12 focuses on digital citizenship in all of its complexity, including country policies to encourage active and empowered users while minimising cyber risks. Children's understanding of their privacy, netiquette and the importance of building resilience is also covered. The last chapter in this section, Chapter 13**,** looks at what these policies mean in practice for the education world, with a special focus on teacher education and partnerships.

Part V: The pending agenda

Chapter 14 highlights a number of transversal themes that have emerged through work with countries and across the publication. In order to empower an active and ethical (digital) generation, gaps in our knowledge and areas for improvement are identified, followed by orientations for policy, research and practice.

This volume aims to identify key changes that may fall outside the conventional education discourse and the challenges they could pose for education. It suggests research and policy options that will help countries in educating 21st century children and the opportunities and challenges they face in the modern world. Many of these trends are a continuously moving target, and reports such as this can become quickly outdated. The task for education systems around the world is to try to stay ahead of, or at least on top of, the curve.

To do this, education, like all public sectors, must break down its silos and work across government departments and research disciplines. It must engage an increasingly broad variety of actors, including the private sector. It must also evolve and grow as our societies and citizens develop, anticipating change and finding preventative solutions rather than simply reacting to problems. We owe it to our children to separate fact from fiction, and help support them to get the best start in life.

Part I. Setting the stage: 21st century children

Chapter 1. Childhood in the digital age

What is the nature of childhood today? On a number of measures, modern children's lives have clearly improved, thanks to better public safety and support for physical and mental health. Many children have access to smartphones and the limitless opportunities the digital world provides before they can walk or talk. At the same time, 21st century children are reporting more stress and anxiety, and the omnipresent nature of the digital world brings new risks, like cyberbullying, that follow children from the schoolyard into their homes.

This chapter provides an overview of trends in child physical health, emotional well-being, families and peers, and digital technologies. Setting the stage for the rest of the volume, it takes a special look at the intersection between two of those themes: emotional well-being and digital technologies. It ends with an overview of the publication and the policy questionnaire that generated the country-level solutions to shared challenges.

Understanding childhood today

What is the nature of childhood today? Older, better educated parents are increasingly advocating for their children and playing an active role in their education. Safer environments and better regulations (for example, on physical play spaces, and more effective bicycle helmets and car seats) have helped reduce child mortality due to accidental injury across the OECD. New technologies empower children's self-expression, information seeking and socialisation, and in times of need, help could be just a phone call – or WhatsApp message - away. On a number of measures, modern children's lives have clearly improved: better health care, public safety, and support for their physical and mental well-being (OECD, 2016[1]; OECD, 2019[2]).

At the same time, there are signs of new stresses. Children in the 21st century are increasingly pushed to do more by overprotective "helicopter parents" who hover over their children to protect them from potential harm. Modern parents are also more likely to share images of their children online without their consent, potentially raising concerns around online safety and security. On an emotional level, children are reporting more stress and anxiety, including increased expectations and pressure to excel in an ever more competitive educational environment.

On a physical level, children are reporting less sleep. Child obesity is increasing across the OECD, bringing with it a host of potential physical, social and psychological challenges. There are worries that children are spending less time on old-fashioned activities like running around outside in favour of time in front of a computer screen. Technologies which help parents stay connected to their children also make it more difficult to monitor children's behaviour once they have their own devices. And the omnipresent nature of the digital world means that new cyber risks like cyberbullying follow them from the school yard into their homes and infiltrate their free time.

There is an urgent need to explore the lives of modern children and better understand what this means for education. Taken together, these trends raise a series of questions:

- What is the nature of childhood today?
- How can teachers and schools work together with parents and communities to protect and guide children while still allowing them to be children, and learn by making mistakes?
- What are the impacts on education, from early childhood education and care to high school, and what does this mean for teaching and learning at each stage?

Education must evolve and grow with our societies, anticipating change rather than simply reacting to problems. This work explores the potential of education systems to proactively adapt and develop along with our communities and children. The overall goal is to identify innovative, collaborative models that bring together parents, communities and schools to strengthen children's resilience, lower their stress levels, enhance well-being and improve learning.

21st century children

The term "21st century children" evokes images of radical change, turning the corner from a previous way of being. A new century brings endless opportunity – and potentially also endless risk. Yet although modern children's lives have changed in many ways, many of these changes have been underway for some time. The evolution of family has been 50

years in the making. Public health campaigns and medical science have been working ceaselessly for decades to improve child well-being and physical health outcomes. Rising obesity rates in children are the products of a multitude of factors, some of them intergenerational. The turn of a century does not inherently mean discontinuity with the year before it, in this or in any other time.

In the same vein, while digital technologies are certainly new (or at least only a few decades old), there has always been anxiety associated with technological change. The printing press, the radio and the car all caused misgivings when they first appeared. Communication technologies such as the cinema, radio and television have all been accused of various evils, from undermining cultural standards and encouraging vice and immoral behaviour to being used as a tool to threaten democracy (see Syvertsen (2017[3])) for a fascinating review). For modern readers, warnings that television will "rot your brain" and that the wireless (radio) could "spread information – or more precisely misinformation – in an uncontrolled way" (Hendy (2013[4]), cited in Syvertsen (2017[3])), might sound especially familiar.

While it might be tempting to look back on these declarations with fond forgiveness, it is both interesting and important to think about what these issues mean for the evidence used to inform policy and practice. The first decades of the 21st century are the intersection of a turn of a millennium and rapid technological change. However, it is important to remember that we do not start with a blank slate just because we are in a new century. While there is a need to understand what has really changed in children's lives, it is equally important to understand what has not changed.

As part of this, it is important to guard against a very human tendency to over-dramatise, particularly when it comes to turns of the century and disruptive technological change. In order to do this, it is import to return to research and evidence as a starting point, in order to understand the reality of children's lives and to devise responsible policy solutions to challenges observed. This is just as important for the social sciences – including education – as it is for the medical sciences, as Box 1.1 demonstrates.

Box 1.1. When hyperbole meets science: The example of sleep guidelines

The rigour of medical research is often vaunted in education. Yet Matricciani et al's (2012[5]) systematic review of 32 sets of medical recommendations for sleep duration dating from 1897 to 2009 is startling. They found that "Recommended sleep duration consistently exceeded actual sleep duration by about 37 minutes… as if children always needed extra sleep, no matter how much they were actually getting. The rationale for sleep recommendations was also strikingly consistent for more than 100 years: children were overtaxed by the stimulation of modern living, although that stimulation was embodied in whatever the technological avatar of the time was". These "stimulations" included schoolbooks, radio, television and the Internet.

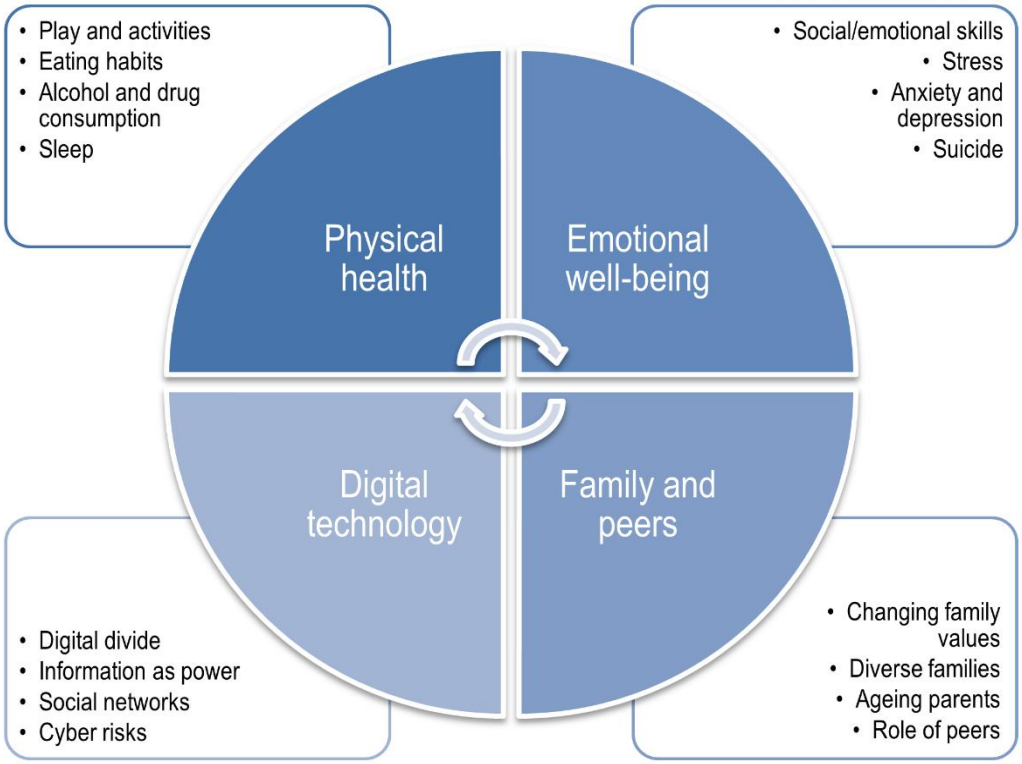
The review also highlighted the "consistency with which authors acknowledged the lack of empirical foundation for their recommendations, despite extremely detailed and quantified guidelines. It is remarkable that after more than 100 years, sleep recommendations are still being issued in the acknowledged absence of meaningful evidence."

Source: Matricciani et al. (2012[5])

Four themes

Returning then to the initial question: what is the nature of childhood today? This is an enormous question, covering everything from philosophical treatises on the worth of the child to social and political interpretations of childhood, and more. In order to operationalise our understanding of the transformed context of childhood, a decision was made to focus on four main themes[1]: physical health, emotional well-being, digital technologies and peers and families (see Figure 1.1).

Figure 1.1. 21st Century Children: Four main themes



These four themes are interrelated, and they also interact with broader societal trends. One example is inequality: a greater concentration of income among the top 1% is associated with lower life satisfaction and a higher likelihood of reported stress, anger, pain, worry and sadness in those outside of this category (Burkhauser, Neve and Powdthavee, 2016[6]). Socio-economically disadvantaged individuals are more likely to engage in risky lifestyle behaviours such as drug use. They are also more likely to have reduced access to services (costs, location, transportation), including safe facilities for physical activity and green space (OECD, 2015[7]).

In terms of education, disadvantaged children are also more likely to have poorer educational attainment, lower academic performance and increased rates of grade repetition (OECD, 2018[8]). Furthermore, inequality is persistent; children from low-income families are also more likely to fall into poverty later in life (OECD, 2017[9]).

Box 1.2. The 21st Century Children project

The OECD/CERI project *21st Century Children* was launched in January 2017. It aimed to:

- identify relevant multidisciplinary research and develop an analytic framework to link to education research and policy
- share experiences and common challenges countries are facing and identify examples of good practice
- determine research gaps and issues in need of further study.

The project works through extensive reviews of multidisciplinary research, expert meetings, a policy questionnaire and a series of thematic conferences. The work is deliberately *multidisciplinary*, drawing from a number of different policy and research traditions. It also takes a *lifespan approach*, looking at childhood (ages 0-18) as a whole, regardless of the structures of our education systems.

This volume will focus specifically on two of these themes and their intersections: emotional well-being and digital technologies. Friendships and families – both how they shape and are shaped by these themes - are interwoven into the discussion throughout. Before turning to the specific focus of this volume, this chapter will provide a brief overview of each of the four themes.

Physical health

Good physical health can help children and adolescents learn in the classroom and participate in their communities and broader society. On average across OECD countries, behaviours related to poor physical health outcomes among children and young people have increased from 2000 to 2016 (see Aston (2018[10]) for a full review).

Examples of such trends include increases in rates of inadequate physical activity (less than 60 minutes of moderate to vigorous physical activity per day), overweight and obesity, and poor dietary habits including increasing overconsumption of soft drinks, sweets, salty snacks and fast food (OECD, 2017[9]). The duration and quality of sleep has also been decreasing over time (Matricciani et al., 2012[5]; Reiter and Rosen, 2014[11]).

Encouragingly, recent data illustrate that for some OECD countries, rates of overweight and obesity have stabilised in children (OECD, 2017[9]). Recent data also indicate that fruit and vegetable consumption among children in some OECD countries has increased (OECD/EU, 2016[12]). Another positive trend is a reduction in alcohol consumption and tobacco use (OECD/EU, 2016[12]). Trends in second hand smoke exposure are less clear, however, and studies indicate that as many as 39% of children under 15 years old may be exposed. Most of this exposure occurs during infancy, with periods of exposure diminishing once children begin school (Milanzi et al., 2017[13]; WHO, 2016[14]).

These trends are related to increases in preventable health conditions like type II diabetes and poor cardiovascular health. Data from the Global Burden of Disease project indicates that 18.5% of disease burden globally is attributed to cardiovascular and cerebrovascular diseases, alcohol use disorders and type II diabetes specifically (Institute for Health Metrics and Evaluation, 2017[15]; WHO, 2008[16]). It is important not to understate the concerning nature of these statistics: historically considered diseases of adulthood, cardiovascular

diseases and type II diabetes are now evident in children as young as two years old (Van Buren and Tibbs, 2014[17]).

Improving and maintaining physical health can be achieved by supporting and modelling healthy lifestyle behaviours in school, at home and in the community (OECD, 2019[18]). Interventions that involve stakeholders (including educators, parents/caregivers, policy makers and primary care providers) in the design and implementation, and use technology where appropriate, can change the behaviour of children and adolescents. Investment in improving health must consider how stakeholders can work together, and how health can be embedded in education to enable interventions to improve and maintain the physical health and well-being of children and adolescents in OECD countries.

Box 1.3. The importance of play

Play contributes to the cognitive, physical, social and emotional well-being of individuals. It helps develop creativity and imagination, can tune fine-motor skills and physical fitness, and is a building block of social interactions and collaboration. It is so important, in fact, that it has been recognised by the United Nations' Convention of the Rights of the Child (1989[19]) as a right of every child.

Despite this, in some countries there is a concern that higher levels of stress and pressure (in school and out) result in less time for play, particularly active and unstructured play. Factors that play a role in this shift include (OECD, 2019[20]):

- increased urbanisation, lower levels of trust and more restricted access to open natural spaces resulting in the perception of increased risks and violence and thus limiting tolerance for unsupervised play
- overscheduling of out of school time with structured activities for some children, while others lack adult supervision and stay indoors engaged in unstructured but passive activities, such as watching television.

These elements play out in families, schools and communities, and even in the policy and regulatory world. There are some signs the trend might be reversing: new initiatives to support play (including "risky play", such as climbing trees and other activities that come with a risk of injury) are being developed (Brussoni et al., 2015[21]).

Emotional well-being

Emotional well-being is crucial for our daily lives and overall well-being. Childhood and adolescence are critical neurological developmental periods and nearly one in two mental health problems among adults begin by age 14. On average across OECD countries the following trends in emotional well-being have been identified (see Chapter 3, also Choi (2018[22]) for a full overview):

- Rates of suicide decreased between 1990 and 2015 for 15-19 year olds, with some notable exceptions (e.g. Korea, Mexico and New Zealand).
- Levels of bullying and somatic complaints (e.g. headache, stomach ache, feeling dizzy) have remained unchanged.
- There are higher rates of depression and anxiety, and lower reported life satisfaction.

It is important to raise awareness and to seek help early on for mental health problems, particularly for children and adolescents, as these problems tend to recur and have lasting negative consequences on life satisfaction, education and labour market outcomes.

Stable and positive relationships with parents and teachers are essential for improving children's well-being and social and emotional skills. Parents and teachers who respect and trust children, provide support when they are facing difficulties and care about their well-being can help them become resilient and better cope with adversities in life. On the contrary, poverty, family dysfunction, abuse and history of mental health disorders pose significant risks to child well-being (see Choi (2018[22]) for a full overview).

Families and peers

Socialisation and relationships have a significant impact on one's life and well-being. Families play a huge role in children's cognitive, developmental, educational, labour and health outcomes, particularly at the youngest ages. In addition to families, peers play an important part in social and emotional development, especially from middle childhood through adolescence.

Outside the family setting, how individuals form relationships with their friends and peers has also changed in recent years. Increasing diversity in our societies means that children and adolescents in OECD countries are more likely to meet and interact with peers and teachers from different cultural backgrounds, ethnicities and sexual orientations. In addition, social interaction has changed significantly with the increased use of digital technologies, particularly for adolescents as heavy users of texting, instant messaging and social networking sites.

Families and friends are crucial in shaping skills, and can affect later outcomes. The age and life phase is important when considering the role of parents and peers in a child's life:

- early childhood: strong parent-child attachment is associated with positive physical, social, and emotional development
- middle childhood: peers are increasingly important, family is still central
- adolescence: peers are key, but family is still important.

Digital technologies

Whether it is to acquire new skills, or connect with distant as well as near friends and family, the Internet plays a central role in children's lives. Access to online information and services has become so important that several national governments, including those of Costa Rica, Estonia, Finland, France, Greece and Spain, have formally recognised Internet access as a human right.

A review of the literature on digital technologies highlights the following trends (Hooft Graafland (2018[23]), see also Chapter 2 for more detail):

Closing the first digital divide: Access to technology

Most children in the OECD are connected, and they are spending increasing amounts of time online. In 2015, 91% of 15-year-olds who took the Programme for International Student Assessment (PISA) reported that they had access to a smartphone, 74% had access to a portable laptop, 60% had access to a desktop computer and 53% had access to a tablet with Internet connection. Students spent almost two and a half hours online outside of

school on a typical weekday, and more than three hours on a typical weekend on average across OECD countries.

Another major trend is that children are accessing the Internet at younger ages: on average across OECD countries, 18% of students in 2015 accessed the Internet for the first time before reaching the age of six, up three percentage points from 2012. Importantly, time spent online by children is significantly correlated with time spent online by parents, as well as the availability of technological devices in the home environment.

The second digital divide: Inequalities in skills and use

Digital skills can be classified into four broad categories (Helsper, Van Deursen and Eynon, 2016[24]):

- operational skills to use the Internet and other computer equipment
- information-navigation skills to search, find and understand information on the Internet and to verify and evaluate sources
- social skills to communicate and interact online and build digital social capital
- creative skills to create and share quality content online.

Children's digital skills are affected by the quantity and quality of their digital experience. Although *access* to technology has now generally become widespread across OECD countries, the second digital divide (that is, how the technology is *used*) is a serious concern.

Outside school, disadvantaged students tend to prefer using the Internet for chatting rather than sending emails. They are also less likely to use the Internet to read the news (55%) or to obtain practical information (56%) in comparison with advantaged students (60% and 74%, respectively) (OECD, 2017[25]).

Disadvantaged students may also not be aware of how to take advantage of technology resources (e.g. MOOCs [Massive open online courses], financial services or job searching platforms) or lack the skills, motivation and engagement required to turn online opportunities into offline opportunities (Hatlevik et al., 2018[26]).

Although schools are often seen as the best environment to even the playing field between advantaged and disadvantaged students, there are concerns about the capacity of teachers to equip children with sound digital skills. Teachers consistently report "use of ICT skills for teaching" as their second highest need for professional development, after teaching students with special needs (OECD, 2018[27]).

Digital risks

The more time children spend online, the more they are exposed to digital risks, such as cyberbullying, sexting and harmful user-generated content. It is important to identify which children are more vulnerable to digital risks and compulsive Internet use in order to help protect them. Risk factors include (1) personality factors such as sensation-seeking, low self-esteem and psychological difficulties (acting both as causes and consequences of Internet addiction disorders), (2) social factors, such as the lack of parental support and peer norms, and (3) digital factors, such as specific online practices, online sites and skills (OECD, 2018[28]; Anderson, Steen and Stavropoulos, 2017[29]).

Special focus: Emotional well-being and digital technologies

The extent and intensity of Internet use has given rise to concerns about potential impacts on physical and mental health. There is thus an urgent need to better understand the relationship between emotional well-being and digital technologies. From PISA 2015, we know the following (Hooft Graafland, 2018[23]):

- On average, 54% of students reported that they felt bad when no Internet connection was available.
- In European countries, socio-economically disadvantaged students were more likely to report that they felt bad without available Internet connection, compared to advantaged students.

The mass use of digital technologies is a relatively recent phenomenon and there is limited hard evidence to date on whether digital technologies, including social media, cause mental health problems in children and young people (OECD, 2018[30]). The "Goldilocks" hypothesis argues that moderate use of technology can have a positive effect on children's mental well-being (Przybylski and Weinstein, 2017[31]). Moderate use allows children to take advantage of the opportunities provided, such as connecting to friends through social networks and using the Internet to seek information. Children use the Internet to enhance their existing friendships and stay in touch. In fact, children tend to disclose more intimate details with friends online, which facilitates different (and sometimes closer) relationships (see Chapter 5). A systematic review of the literature found that the most robust studies suggest that the relationship is U-shaped, where no use and excessive use can have a small negative impact on mental well-being, while moderate use can have a small positive impact (Kardefelt-Winther, 2017[32]).

This is a fast-changing field and it is key to continue to connect to emerging high quality research to guide policy and practice. For example, returning to the topic of risks, many parents use time limits and bans on particular activities or content. These restrictive strategies work to reduce risks, but come at the cost of digital opportunities (OECD, 2018[28]). Parents who are more confident in their own or their children's digital skills tend to take less restrictive approaches. By encouraging and taking part in digital activity with their children, such parents create a safer environment without hindering children's agency and learning, helping them better manage risk (Livingstone et al., 2017[33]).

The intersection between emotional well-being and digital technologies is also expressed in other ways. Technology is influencing parenting styles and social media permit parents to share images of their children online, often without their consent. This can be detrimental to children and potentially increases concerns of online safety and security (see Chapter 6).

There are also data being generated when children use digital technologies, some of it obvious (for example, when they have to sign in to an app). However, developments such as the Internet of Things mean that children and adolescents might be connected without recognising that they are. Data generated by online activities or through digital toys or household personal assistants like Siri and Alexa, for example, means that visual data, voice recordings and metadata can be collected from a range of devices not always considered "computers". How this data is used, by whom, and for what purpose is an area with important research and policy implications.

Despite the importance of these issues, there appears to be a disconnect between the available evidence, media and public perception and the policy approaches proposed. Box 1.4 provides one example of this.

Box 1.4. Disconnect between research and policy: The case of Internet addiction

One of the most sobering examples of the disconnect between research and policy/practice is the case of Internet addiction. There is little evidence suggesting that a significant number of children/adolescents are dependent on devices to the extent that they are at risk of significant negative health outcomes, or that they experience a severe impairment in a major area of their lives, the definition of addiction. The literature on this topic is problematic in a number of ways, namely (Kardefelt-Winther, 2017[32]):

- There is no consensus on how to define or measure this type of behaviour, and researchers disagree whether digital technology should be considered addictive or not.
- Careless use of addiction terminology can downplay real consequences of addictive behaviours, while overstating risks of harm for those who potentially engage in excessive, yet not harmful, use of technology.
- Claims that "new technology 're-wires' children's brains" resulting in development of addiction are largely unfounded – changes in the brain (i.e. plasticity) are normal developmental processes in childhood and adolescence, and any major 'rewiring' as a result of technology use is unlikely.

Policy and practices aimed at improving children's emotional well-being should thus focus on factors such as family functioning, social dynamics at school and socio-economic conditions. Instead of focusing only on outcomes related to time spent on digital technology, researchers should pay more attention to the influences of the content children encounter and the activities they participate in online, in addition to their social and family environments.

Sources: Kardefelt-Winther (2017[32]) and UNICEF (2017[34])

For education, policy and practice, implications include understanding how to foster digital literacy and resilience, to help strengthen the well-being of the most disadvantaged students. It means understanding how partnerships work and what capacities are required at each level of the system to be able to take advantage of the knowledge of diverse actors. It means thinking carefully about the skills and competencies required of teachers and school leaders in a digital world, and providing the tools and support needed to build those capacities.

Crucially, given the speed of change of digital technology, this means additionally thinking through how to continue to develop those skills, tools and partnerships for what is essentially a moving target. At the present moment, very few systems appear to be able to do this well and consistently, and a lack of common definitions and reliable measurements makes this particularly challenging on an international level. Yet internationally comparable evidence is essential to understand and track trends in the inherently borderless digital world.

Overview of the volume

The extent and intensity of Internet use has given rise to concerns about its potential impact on physical and mental health. There is thus an urgent need to better understand the relationship between children's emotional well-being and use of digital technologies. The

volume is organised in four parts, tied closely to the work done by the OECD/CERI 21st Century Children project.

Box 1.5. OECD/CERI 21st Century Children project policy questionnaire

The 21st Century Children Policy Questionnaire explored common challenges and policy initiatives regarding children in the 21st century along four main themes: new technologies, emotional well-being, families and peers, and physical health.

The questionnaire was circulated to the CERI Governing Board members for responses between September 2018 and February 2019. Respondents were asked to reflect their ministry or government's view regarding the various challenges and themes under study.

26 countries and systems responded to the questionnaire: Australia, Belgium (Flemish Community and French Community), Canada, Czech Republic, Denmark, Finland, France, Greece, Ireland, Japan, Korea, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Russian Federation, Spain, Sweden, Switzerland, Turkey, the United Kingdom (Scotland) and the United States.

Responses were submitted by the Ministries of Education or other responsible coordinating body for Education of each system. In many cases these responses integrated information from other ministries, including International and Foreign Affairs, Public Health, Justice, Social Affairs, Environmental Protection and Regional Development, Culture and Sports.

The responses to this questionnaire offer a detailed illustration of the challenges that education ministries face in working to reinforce emotional well-being in a digital age. Countries also provided a rich set of examples of innovative solutions to these challenges. Both the challenges and solutions reported will also be featured across the publication.

Part I: Setting the stage: 21st century children

Following this introduction, the next two chapters, also written by the OECD Secretariat, combine extensive reviews of the literature with the challenges reported by countries and systems in the policy questionnaire. **Chapter 2** examines *Children and digital technologies: Trends and outcomes,* covering Internet use and time spent online with the outcomes and impacts of those trends. It also looks at high priority challenges identified by OECD and partner countries in this area, as well as the interconnections between those challenges. **Chapter 3** covers *Trends in children's emotional well-being,* covering mental health indicators and key protective and risk factors underlying these trends. It also looks at the high priority challenges in emotional well-being identified by OECD and partner countries as well as the interconnections between these challenges.

Part II: Setting the stage: Children's relationships in the 21st century

Part Two of the volume turns its attention to children's relationships and the supporting players in their lives, from parents to peers. **Chapter 4**, also by the OECD Secretariat, looks at *Parenting and friendships in the 21st century*. It reviews the literature on the importance of positive and supportive relationships for children and provides an overview of parenting styles and what we know (and don't know) about their impact. It highlights helicopter parenting across the OECD and concludes with a look at friendships, both traditional face-to-face and virtual.

The focus on friendships continues with the contribution of **Gustavo Mesch**, who takes a closer look at *Online and offline friendships*. While social circles were traditionally restricted to friends met in the neighbourhood, at school or through extracurricular activities, the rise of the Internet has made geographical proximity and social similarity less crucial in making friends. Are online relationships replacing "higher quality" offline ones? Or are they potentially improving friendship networks and empowering disadvantaged groups? Chapter 5 addresses these questions and more.

Shifting to parenting, **Andra Siibak's** contribution explores *Digital parenting and the datafied child*. The chapter reviews digital parenting practices, beginning at the earliest stages with fertility and pregnancy apps and continuing through early childhood with the use of mobile applications and baby monitors to ease parental anxiety. The example of sharenting (i.e. the parental practice of sharing information and photos about one's children on social media) is provided to suggest that such digital parenting practices not only jeopardise children's rights and privacy, but they can also lead to negative outcomes affecting both the parent-child relationship as well as the well-being of the child.

The last chapter in this section takes a step back and looks at *The social context of adolescent relationships*. **Catrin Finkenauer and colleagues** examine the way in which global trends affect relationship behaviour and maintenance during adolescence. Issues such as climate change, forced displacement, individualism and digital technologies all affect adolescent development, relationships and mental health. Adolescents not only directly experience the outcome of social changes, but will also be the key driver for social change.

Part III: Online opportunities and risks: Ensuring child well-being

Part Three of this volume examines the complex interplay between online opportunities and risks, using the lens of child well-being. The section begins with a focus on screen time. **Daniel Kardefelt-Winther's** review of the evidence on *Children's time online and well-being outcomes* summarises existing evidence as well as emphasising the methodological limitations that exist in this area of research. In particular, it highlights the general lack of conclusive evidence of the impact of technology on children, and calls for a more careful consideration of methodological limitations in research and policy.

Ellen Helsper and **Svetlana Smirnova** examine disparities of digital outcomes against the backdrop of social inequalities in *Youth inequalities in digital interactions and well-being*. In particular, this chapter explores how information and communications technology (ICT) access, skills and uses relate to different socio-cultural and well-being outcomes. Inequalities for young people are examined from all socio-economic backgrounds but highlight the experiences of the most disadvantaged – young people not in employment, education or training.

And finally, **Elettra Rochi** and **Lisa Robinson** look at *Child protection online*. As part of the renewal of the 2012 OECD Recommendation for the Protection of Children Online, this chapter highlights challenges faced by governments which underline the dynamic nature of online protection as a public policy and legislative area. It provides an overview of recent developments in online protection policy for children and examples of recent regulatory responses across OECD countries.

Part IV: Children as digital citizens: Policies and partnerships to foster digital literacy and resilience

Part Four looks at the larger issues of children as digital citizens. Authored by the Secretariat, it provides a series of examples from country policy initiatives to address many of the challenges laid out in the preceding sections. **Chapter 11** looks at *Fostering digital literacy and well-being,* highlighting the important efforts countries have made to close digital divides and strengthen digital literacy while at the same time taking care of student well-being, including policies on screen time. **Chapter 12** focuses on *Empowering an active and ethical (digital) generation,* exploring the subject of digital citizenship in all of its complexity, including country policies to encourage active users while minimising cyber risks. Children's understanding of their privacy, netiquette and the importance of building resilience is also covered.

The last chapter in this section, **Chapter 13,** looks at what many of these policies mean in practice for the education world, with a special focus on *Building capacity: Teacher education and partnerships.* Supporting teachers to respond to new societal, economic and digital needs includes helping schools work with a diverse set of actors, some of whom (for example those from the private sector) have different aims and goals. This is a complex challenge, and the chapter looks at both some of the most difficult issues as well as examples of successes from across the OECD.

The book ends with a look to the future and the pending agenda for research and policy. **Chapter 14** highlights a number of transversal themes that have emerged through work with countries and across the discussions of this publication. Gaps in our knowledge and areas for improvement are then identified, followed by orientations for policy, research and practice. As many of these issues are a continuously moving target, education must work to stay ahead of, or at least on top of, the curve in terms of research, policy and practice.

Concluding note

This volume takes a comprehensive look at emotional well-being and digital technologies in modern childhood, and the intersections between them. Its aim is to identify key changes that may fall outside conventional education discourse and the challenges they could pose for education. It suggests possible solutions to these challenges, with the goal of providing research and policy options that will help countries in educating 21st century children, and the opportunities and challenges they face in the modern world.

Education, like all public sectors, must break down its silos and work from a more holistic perspective that cuts across government departments and research disciplines. It must work with an increasingly broad variety of actors, including the private sector. It must also evolve and grow as our societies and citizens develop, anticipating change and finding preventative solutions rather than simply reacting to problems. By analysing the available research and data from a broad range of disciplines and linking these findings to educational policy and practice, this volume will explore the potential of education systems to proactively adapt and change along with our communities and children.

Note

[1] The choice of themes was made in conjunction with the Centre for Educational Research and Innovation (CERI) Governing Board members.

References

Anderson, E., E. Steen and V. Stavropoulos (2017), "Internet use and problematic internet use: A systematic review of longitudinal research trends in adolescence and emergent adulthood", *International Journal of Adolescence and Youth*, Vol. 22/4, pp. 430-454, http://dx.doi.org/10.1080/02673843.2016.1227716. [29]

Aston, R. (2018), "Physical health and well-being in children and youth: Review of the literature", *OECD Education Working Papers*, No. 170, OECD Publishing, Paris, https://dx.doi.org/10.1787/102456c7-en. [10]

Brussoni, M. et al. (2015), "What is the relationship between risky outdoor play and health in children? A systematic review", *International Journal of Environmental Research and Public Health*, Vol. 12/6, pp. 6423-6454, http://dx.doi.org/10.3390/ijerph120606423. [21]

Burkhauser, R., J. Neve and N. Powdthavee (2016), "Top incomes and human well-being around the world", *CEP Discussion Papers*, https://ideas.repec.org/p/cep/cepdps/dp1400.html. [6]

Choi, A. (2018), "Emotional well-being of children and adolescents: Recent trends and relevant factors", *OECD Education Working Papers*, No. 169, OECD Publishing, Paris, https://dx.doi.org/10.1787/41576fb2-en. [22]

Hatlevik, O. et al. (2018), "Students' ICT self-efficacy and computer and information literacy: Determinants and relationships", *Computers & Education*, Vol. 118, pp. 107-119, http://dx.doi.org/10.1016/j.compedu.2017.11.011. [26]

Helsper, E., A. Van Deursen and R. Eynon (2016), *Measuring Types of Internet Use: From Digital Skills to Tangible Outcomes Project Report*, https://ris.utwente.nl/ws/files/5135433/DiSTO-MTIUF.pdf. [24]

Hendy, D. (2013), "The dreadful world of Edwardian wireless", in Nicholas, S. and T. O'Malley (eds.), *Moral Panics, Social Fears, and the Media: Historical Perspectives*, Routledge, http://sro.sussex.ac.uk/id/eprint/42353/. [4]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [23]

Institute for Health Metrics and Evaluation (2017), *GBD Compare | IHME Viz Hub*, https://vizhub.healthdata.org/gbd-compare/. [15]

Kardefelt-Winther, D. (2017), *How Does the Time Children Spend Using Digital Technology Impact Their Mental Well-being, Social Relationships and Physical Activity? An Evidence-Focused Literature Review*, UNICEF, http://www.unicef-irc.org. [32]

Livingstone, S. et al. (2017), "Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation", *Journal of Communication*, Vol. 67/1, pp. 82-105, http://dx.doi.org/10.1111/jcom.12277. [33]

Matricciani, L. et al. (2012), "Never enough sleep: A brief history of sleep recommendations for children.", *Pediatrics*, Vol. 129/3, pp. 548-56, http://dx.doi.org/10.1542/peds.2011-2039. [5]

Milanzi, E. et al. (2017), "Lifetime secondhand smoke exposure and childhood and adolescent asthma: findings from the PIAMA cohort", *Environmental Health*, Vol. 16/1, http://dx.doi.org/10.1186/s12940-017-0223-7. [13]

OECD (2019), "A healthy mind in a healthy body", *Trends Shaping Education Spotlights*, No. 17, OECD Publishing, Paris, https://dx.doi.org/10.1787/eb25b810-en. [18]

OECD (2019), "Play!", *Trends Shaping Education Spotlights*, No. 18, OECD Publishing, Paris, https://dx.doi.org/10.1787/a4115284-en. [20]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [2]

OECD (2018), "A brave new world: Technology and education", *Trends Shaping Education Spotlight* No. 15, https://doi.org/10.1787/9b181d3c-en. [28]

OECD (2018), *Children and Young People's Mental Health in the Digital Age: Shaping the Future*, OECD Publishing, www.oecd.org/els/health-systems/Children-and-Young-People-Mental-Health-in-the-Digital-Age.pdf. [30]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [8]

OECD (2018), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://doi.org/10.1787/1d0bc92a-en. [27]

OECD (2017), *Obesity Update 2017*, OECD Publishing, www.oecd.org/health/obesity-update.htm. [9]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [25]

OECD (2016), *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-en. [1]

OECD (2015), *How's Life? 2015: Measuring Well-being*, OECD Publishing, Paris, https://dx.doi.org/10.1787/how_life-2015-en. [7]

OECD/EU (2016), *Health at a Glance: Europe 2016: State of Health in the EU Cycle*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264265592-en. [12]

Przybylski, A. and N. Weinstein (2017), "A large-scale test of the Goldilocks Hypothesis", *Psychological Science*, Vol. 28/2, pp. 204-215, http://dx.doi.org/10.1177/0956797616678438. [31]

Reiter, J. and D. Rosen (2014), "The diagnosis and management of common sleep disorders in adolescents", *Current Opinion in Pediatrics*, Vol. 26/4, pp. 407-412, http://dx.doi.org/10.1097/MOP.0000000000000113. [11]

Syvertsen, T. (2017), "Resistance to early mass media", in *Media Resistance*, Springer International Publishing, Cham, http://dx.doi.org/10.1007/978-3-319-46499-2_2. [3]

UNICEF (2017), *The State of the World's Children 2017: Children in a Digital World*, UNICEF, www.unicef.org/publications/index_101992.html. [34]

United Nations Assembly (1989), *Convention on the Rights of the Child*, United Nations Human Rights Office of the High Commissioner, New York, NY, https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1007&context=child. [19]

Van Buren, D. and T. Tibbs (2014), "Lifestyle interventions to reduce diabetes and cardiovascular disease risk among children", *Current Diabetes Reports*, Vol. 14/12, http://dx.doi.org/10.1007/s11892-014-0557-2. [17]

WHO (2016), *Second-hand Smoke Exposure Data by Region*, Global Health Observatory data repository, http://apps.who.int/gho/data/?theme=main&vid=34800. [14]

WHO (2008), *The Global Burden of Disease: 2004 Update*, www.who.int/healthinfo/global_burden_disease/2004_report_update/en/. [16]

Chapter 2. Children and digital technologies: Trends and outcomes

Digital technologies are ubiquitous in the 21st century. Children are avid Internet users, and make use of a range of information and communication technologies. Across OECD countries, children spend more time online than ever before and at younger ages, despite the persistence of various digital inequalities. With this expansion of Internet use, children are exposed to different online risks, but can also make use of the vast array of online opportunities. However, parents, teachers and policy makers struggle to balance the potential opportunities with the fear of risks. This chapter serves as an overview of the various trends, patterns and outcomes of children's digital technology use, and highlights some policy challenges faced by countries.

Introduction

Across most OECD countries, digital technologies are a staple in everyday life. There has been a shift in the ways people work, learn and communicate, as new technologies have infiltrated and transformed life in the 21st century. On average, OECD countries are close to meeting the Sustainable Development Goal targets of ensuring schools have access to the Internet for pedagogical purposes, and in mobile network coverage (OECD, 2019[1]). By the end of 2017, there were more broadband subscriptions than people in OECD countries (OECD, 2019[2]).

These shifts mean that children in this era have been exposed to digital technologies for their entire lives and are the most frequent users of emerging online and digital services (OECD, 2016[3]). They are "connected" in different contexts, not just in the home environment as children also use mobile technologies "on the go" and at school.

Spending time online is associated with both potential risks and rewards. Children are afforded opportunities for self-expression, learning and consolidating friendships (see Chapter 5) on the one hand, while being online also exposes children to risks such as harmful content and cyberbullying on the other (see Chapter 10) (Livingstone et al., 2011[4]).

However, all the various risks and opportunities of digital technologies are not evident, and are not the same for all children. Indeed, children do not benefit equally from the Internet and digital technologies and in general, children who are vulnerable offline tend to be more vulnerable in online spaces as well. Large gaps persist in digital access, skills and use, which can affect both online and offline outcomes for children (Helsper, Van Deursen and Eynon, 2015[5]). Despite these risks, the rights children have to play and to information are recognised internationally through the United Nations *Convention on the Rights of the Child* (United Nations Assembly, 1989[6]). Policies and practice aimed at protection, inclusion and fostering digital skills and resilience are therefore essential, and more desirable in realising these rights and opportunities than taking a limitation-focused approach to children's use of digital technologies that can hinder children's digital engagement.

This chapter will explore some of the trends in children's use of digital technologies in the 21st century and some of the associated challenges, risks and opportunities.

Children and digital technologies: Trends, patterns and outcomes

Children are more connected than ever

The number of children with access to the Internet at home and to a range of digital devices has been steadily increasing in OECD countries. From 2006 to 2015, the proportion of 15-year-olds in OECD countries with access to Internet at home increased from 75-95% (OECD, 2017[7]). Similar results were seen in European Union (EU)-28 households, with a rise in Internet access from 55% in 2007 to 87% in 2017 (Eurostat, 2018[8]). This ranged from 98% of households with Internet access in the Netherlands to 67% in Bulgaria, the EU Member State with the lowest rate of Internet access. Households with dependent children were more likely to have Internet access than those that did not (96% versus 82%) (Eurostat, 2017[9]).

Other remarkable increases in access to technologies are evident. Computers used to be the device of choice for young people to access the Internet. However, over time, popularity of

devices such as tablets and smartphones to go online has exceeded that of computers. For example, according to PISA 2015, 91% of 15-year-olds reported that they had access to a smartphone, 74% had access to a portable laptop, 60% had access to a desktop computer and 53% had access to a tablet with Internet connection (OECD, 2017[7]). In a sample of pre-schoolers in the United Kingdom, parents reported that their children had access to an array of technological devices. 50% of the sample had access to between 4 and 10 devices, 32% had access to 11-20 devices while 9% reported access to over 20 devices (Marsh et al., 2015[10]). Devices ranged from smartphones to tablets to televisions, and children were most likely to have access to an iPad. Despite the advances in many OECD countries, it is important to note that in many countries outside of the OECD, Internet use is less universal (OECD, 2019[11]).

i-kids: The rise of digital technology use in younger children

Across OECD countries, 18% of students in 2015 accessed the Internet for the first time before the age of six, an increase of three percentage points since 2012 (OECD, 2017[7]). Some research suggests pre-schoolers become familiar with digital devices before they are exposed to books (Hopkins, Brookes and Green, 2013[12]), and international trends suggest younger children are increasingly using digital technologies and the age of first use is dropping (Hooft Graafland, 2018[13]). In the United Kingdom, recent results show that 52% of 3-4 year-olds and 82% of 5-7 year-olds are online (Ofcom, 2019[14]). Children generally have their first experience with digital technologies before the age of two (Chaudron, Di Gioia and Gemo, 2018[15]). Often, research on digital technologies focuses on older children or adolescents, so there is a gap in the research on children aged 0-8. However, in recent years, this gap is starting to garner attention and different groups and researchers are addressing it.

For a time, the literature termed children "digital natives", suggesting that since children grew up surrounded by devices and gadgets they would know how to use them. This definition, however, is critiqued (Helsper and Eynon, 2010[16]; Selwyn, 2009[17]; OECD, 2012[18]); just being online, or having access to online tools, does not mean children have the skills or knowledge to be safe and effective Internet users, or to exploit the benefits of being online. Education systems are recognising the need for information and communications technology (ICT) skills to be introduced and instilled in younger children, which can be seen by a sharp increase in ICT integration into pre-primary curricular frameworks in a number of jurisdictions in recent years (OECD, 2017[19]).

Young children go online using various devices and for various reasons. For example, the Parenting for a Digital Future survey surveyed 2 000 parents in the United Kingdom, finding that the majority (73%) of parents of 0-4-year-olds said their child had gone online using a tablet within the past month. Meanwhile, 41% of respondents said their child had used a mobile or smartphone, and 24% had used either a laptop or desktop computer (Livingstone et al., 2018[20]). In a sample of Estonian parents with children aged 0-3, children used communication apps such as FaceTime and Skype to keep in touch with family members, and they also spent time looking at photographs. In addition, 25% of the children used smartphones and tablets daily to watch television, videos and cartoons on YouTube (Nevski and Siibak, 2016[21]). Young children tend to prefer touchscreen devices; tablets are popular in this group due to their portability, size of the screen and ease of use of the interactive screen (Chaudron, Di Gioia and Gemo, 2018[15]).

A specific risk for young children is that they use apps which are not aimed at their age range (Marsh et al., 2018[22]); thus, parents and caretakers should monitor children's digital

activities to ensure age-appropriateness of materials. Furthermore, instilling digital skills at a young age is important so children can use devices effectively and safely. Basic digital skills are evident even in samples of young children. For example, in a sample of children aged 0-5 in the United Kingdom, 65% of those surveyed were able to swipe the screen unassisted, and 60% were able to trace shapes with their fingers and drag items across the screen. Luckily for parents, only 14% were able to purchase new apps in an app-store/marketplace unassisted, with 61% being unable or unaware of how to do so (Marsh et al., 2015[10]).

Spending time online

The increase in access to digital technologies and the Internet has been accompanied by a rise in the amount of time that children spend online. On a typical weekday, 15-year-olds in OECD countries spend almost two and a half hours online outside of school. This rises to more than three hours on a typical weekend day. The daily amount of time spent online rose from 2012 to 2015 by 40 minutes both on weekdays and weekends (OECD, 2017[7]).

Access to mobile versus fixed technologies has also expanded where and when children access the Internet. "Ubiquitous internetting" suggests that people can choose to be online permanently, assuming they have the right hardware, irrespective of time or place (Peter and Valkenburg, 2006[23]); children no longer need to be seated in front of a computer to have Internet access. Despite the potential for ubiquitous internetting, children tend to report that they most often use the Internet at home, more so than when they are "on the move" or at school (Mascheroni and Ólafsson, 2014[24]; OECD, 2015[25]).

With increases in Internet availability and use, there are some children who go online for many hours during the day. PISA defines "extreme Internet users" as those who spend more than 6 hours online per day outside of school. In 2015, 26% of respondents were considered extreme Internet users on weekends, versus 16% during the week (OECD, 2017[7]). According to a report from the United States, American teenagers spend on average about six and a half hours with screen media, while children aged 8-12 spend about four and a half hours daily (Rideout, 2015[26]).

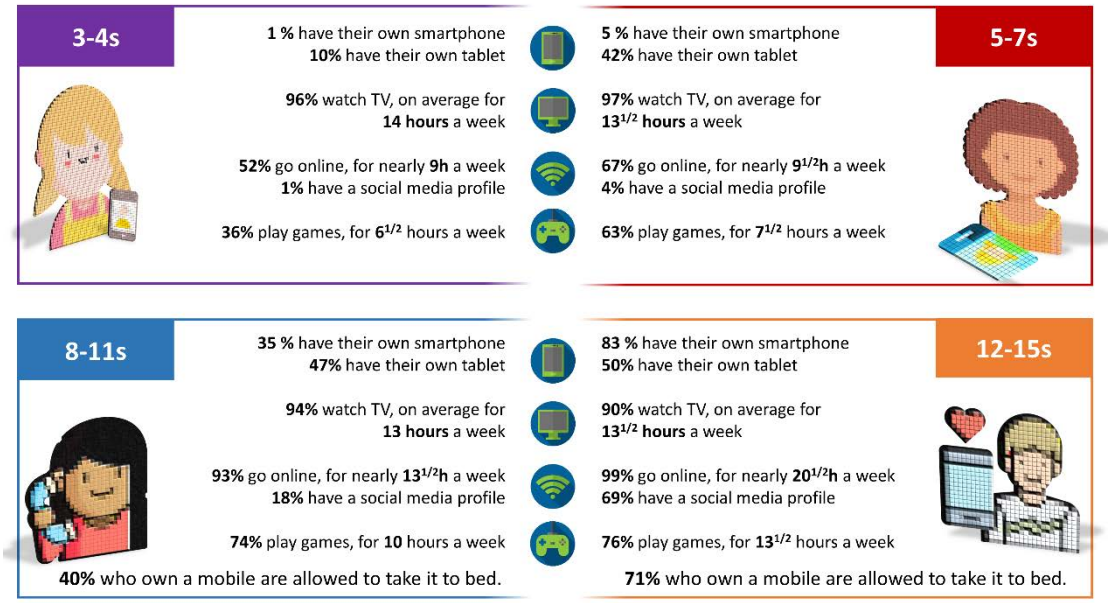
The evolution of children's online activities

Children are using digital technologies for a multitude of activities both in and out of school. Young people engage with digital devices for many purposes, from watching television to gaming to chatting to doing research for school projects. Television sets and tablets are used by a majority of children, according to data from the United Kingdom. Streaming services such as Netflix and Amazon Prime are quickly gaining popularity as the time spent in front of traditional television sets is decreasing, with YouTube becoming the viewing platform of choice especially for children aged 8-11 (Ofcom, 2019[14]). YouTube is also a popular platform in samples of young children; the app has proven more popular with pre-schoolers than popular gaming apps such as Angry Birds and Temple Run (Marsh et al., 2015[10]).

PISA also investigated online leisure activities of 15-year-olds across OECD countries and found that between 2012 and 2015, the share of students engaging daily in online activities increased by four percentage points on average. Overall, 73% of students reported participating in social networks daily, 61% reported chatting online every day and 34% reported playing online games every day or almost every day (OECD, 2017[7]). Furthermore, across OECD countries, 88% of students reported that the Internet was a great

resource to obtain information and 49% of students agreed that they used the Internet to exchange solutions to problems with others (OECD, 2017[7]).

Figure 2.1. Snapshot of children's media use (United Kingdom)



Source: Adapted from Ofcom (2019[14])

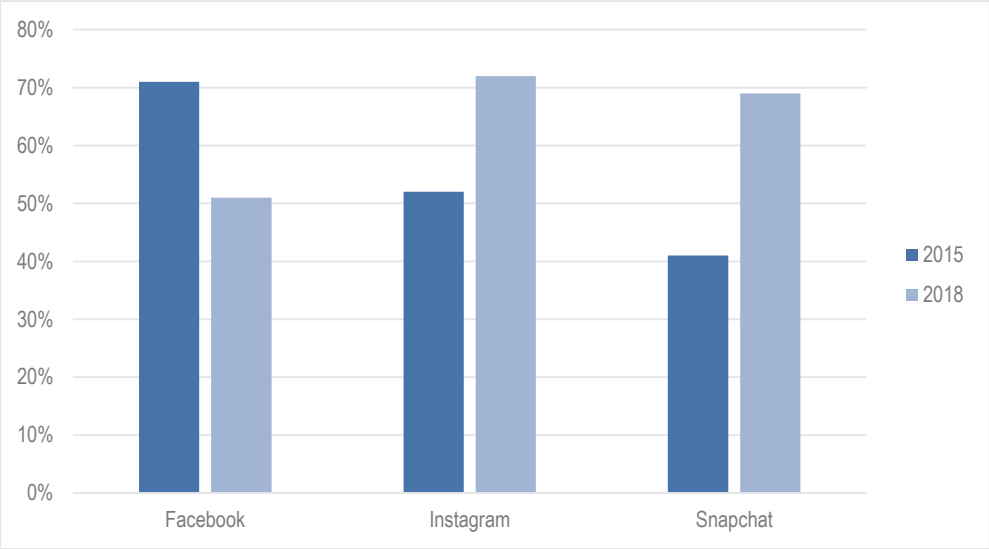
Social media use in children is prevalent, especially among teens. For example, in the United States about 97% of teens aged 13-17 are active on at least one social media platform (Pew Research Center, 2018[27]). Data suggest that in the United Kingdom, 69% of children aged 12-15 (Ofcom, 2019[14]), as depicted in Figure 2.1, had a social media profile. A small proportion of young children also have social media profiles, which violates many platforms' age policies (e.g. Facebook, Instagram, Snapchat, Tumblr and Twitter all have a 13+ age policy).

With the rise and fall in popularity of different social media platforms, and the development and disappearance of apps happening almost daily, children's platforms of choice can change rapidly. For example, as seen in Figure 2.2, over the course of three years the popularity of different platforms changed quite significantly in teens from the United States. In the United Kingdom, Facebook remains the most popular social media site for 12-15 year-olds, although the popularity of Instagram and messaging app WhatsApp increased between 2017 and 2018 (Ofcom, 2019[14]).

In addition to these overall averages, different groups of children, such as boys and girls, use the Internet in different ways. Boys of all ages are more likely to use desktops and gaming consoles while teenage girls are more likely to use smartphones, laptops and tablets to go online (Mascheroni and Ólafsson, 2014[24]). This is the case across OECD countries, where 75% of 15-year-old boys reported playing one-player games regularly, with more than 13% playing every day. A slightly lower proportion played multiplayer or collaborative online games regularly (70%) with 20% doing so every day. In comparison, the majority of girls reported never or hardly ever playing one-player games, with an even larger proportion not engaging in collaborative online games either (OECD, 2017[7]). In the United States, girls were more likely than boys to use the multimedia messaging app

Snapchat; on the other hand, boys rated YouTube as their preferred online platform (Pew Research Center, 2018[27]). Internet habits can also differ among children from different socio-economic or cultural backgrounds, which can in some instances compound and deepen digital inequalities.

Figure 2.2. Change in popular social media platform use in U.S. teens from 2015-2018



Source: Lenhart (2015[28]) and Pew Research Center (2018[27])

Diversification of digital technologies: Beyond the screen

Digital technologies are moving beyond the screen, which affords different opportunities for children. Developments such as artificial intelligence, machine learning, the Internet of Things (IoT) and autonomous technologies are emerging rapidly. The IoT refers to objects that, when tagged, can communicate with other tagged objects (Pascual-Espada et al., 2011[29]), and is becoming more prevalent in children's lives (Hooft Graafland, 2018[13]). Wearable fitness trackers, devices that keep parents alert of their children's location, and 21st century baby monitors that provide feedback about child sleeping patterns and other physiological functions pose certain problems (see Chapter 6). These include the influence that these devices have on the behaviour of children and issues around data security and privacy (Manches et al., 2015[30]).

Among the growing world of the IoT is the Internet of Toys, in which toys are wirelessly connected to other toys or databases. The prevalence of Internet-connected toys is projected to increase in the coming years (Mascheroni and Holloway, 2017[31]), and with this come various data security and safety risks (Holloway and Green, 2016[32]). The potential benefits for children include enjoyment, educational benefits and the accessibility of functions such as programming and 3-Dimensional design (Holloway and Green, 2016[32]). Autonomous technologies (technologies with the ability to function without being told what to do) are also becoming more common. These enable children to interact with artificial 'peers' who appear to have feelings, narrowing the gap between machines and living things (Druga et al., 2017[33]).

Box 2.1. Artificial intelligence

With new developments and diversification of digital technologies, there has been a boom in the development of artificial intelligence, which is part of daily life in many countries. Artificial intelligence is the "ability of machines and systems to acquire and apply knowledge, including performing a broad variety of cognitive tasks" (OECD, 2019, p. 20[34]). These tasks can include pattern recognition, decision making and processing language. For example, learning algorithms can detect online behavioural patterns, and then use these patterns to influence things like search results and advertising.

Other ways in which artificial intelligence is prominent in the daily lives of children and adults is through virtual assistants, such as Siri (Apple) and Alexa (Amazon). Voice recognition allows children to relay various commands to these tools, and the anthropomorphic framing (i.e. giving a name and a human voice to both Siri and Alexa) can help stimulate empathy for them (Hooft Graafland, 2018[13]). There are opportunities for artificial intelligence to help education systems around the world as well. For example, the use of artificial intelligence can help promote personalised learning through taking over routine tasks thereby freeing up teachers' time to work with their students directly (Pedró et al., 2019[35]).

Despite these huge opportunities, issues such as ethics, fairness, transparency, safety, accountability and privacy feature heavily in policy agendas focused on artificial intelligence (OECD, 2019[34]). For example, safety concerns over driverless vehicles and biases in machine learning pertaining to race, gender and stereotypes can be harmful (OECD, 2019[34]).

The diversification of technologies, including mobile and fixed devices, enable children to engage different behaviours. For example, the notion of "screen-stacking," also referred to as media multitasking (i.e. using more than one technological device at the same time), is a relatively understudied phenomenon. It is thus unclear what potential outcomes this can contribute to (Uncapher et al., 2017[36]).

The changing nature of online inequalities

Digital inequalities are intersectional; factors such as socio-economic background and gender affect digital inequalities (Robinson et al., 2015[37]). Inequalities in digital domains have the potential to both reinforce and exacerbate existing social inequalities (DiMaggio and Garip, 2012[38]), which make them important elements for policy makers to address. The literature points to three main categories of "digital divides" or levels of digital inequality, the first, second and third level divides, which will be subsequently outlined. The term divide is used here, as this is what is commonly used and understood in policy circles. However, there is some scholarly debate on this use of terminology that suggests a split between "haves" and "have-nots", rather than portraying a spectrum of access and skills (see Chapter 9).

With the expansion of broadband uptake and accessibility of ICTs, the "first-level digital divide" – the gap between those who have Internet access and those who do not – is shrinking. By now, most adolescents across OECD countries have physical access to the Internet and to digital devices (OECD, 2017[7]). While this divide is diminishing, there remain important barriers to access for children across OECD countries such as differences

in material access (Gonzales, 2016[39]) (i.e. access to hardware, software and peripheral devices like printers and hard drives).

Divides also persist between children from different socio-economic backgrounds, and in rural versus urban settings. Lower uptake in rural areas is explained by factors including lack of broadband penetration into these areas, higher prices in harder to serve areas and issues of quality such as speed and reliability. Broadband speed is not consistent within or between countries, often due to geographical limitations and difficulties servicing remote or rural communities. However, a number of OECD countries have set ambitious targets to bring higher-speed coverage (at least 100Mbps) to the majority of their populations (OECD, 2019[11]). Ensuring adequate broadband speed and quality is essential for children to participate in online spaces and harness the full benefits of the Internet.

As more people are gaining access, "second-level digital divides" – inequalities in skills and usage patterns (Hargittai, 2002[40]) – are becoming increasingly important. According to the Survey of Adult Skills, 56% of the adult population have no ICT skills or have adequate skills to fulfil only basic technology-related tasks; although young people are more ICT proficient than older people (OECD, 2016[41]). However many children also lack digital skills, highlighting the need for expanding opportunities to develop digital literacy (UNICEF, 2017[42]). Not only are there gaps in children's digital abilities, they also use technologies in different ways. For example, PISA results suggest that advantaged students were more likely to read the news and use the Internet to obtain practical information than their disadvantaged peers, who were more likely to spend their online time playing games or chatting (OECD, 2016[43]). It is clear that simple access to digital technologies does not ensure equality of opportunities (Livingstone and Helsper, 2007[44]); children need adequate skills and motivations in order to make full use of the opportunities available online, and in order to protect themselves from risk and build resilience.

In countries with near-universal Internet access, a "third-level digital divide", referring to inequalities in offline outcomes (e.g. material or social benefits/outcomes), has become more noticeable. This divide suggests that equal access, skills and use of digital technologies may not afford equal offline outcomes (Hooft Graafland, 2018[13]). The Internet may thereby be magnifying existing offline inequalities.

Where there are opportunities there are risks, and vice versa

As children go online more often and more frequently, their exposure to online risks and opportunities increases. Staksrud and colleagues (2009[45]) classify online opportunities and risks in three categories: content, contact and conduct, as outlined in Table 2.1. These risks and opportunities evolve with developments in technology and different patterns of engagement (for more, see Chapter 10).

It is important to note that children who are vulnerable offline are also more likely to be vulnerable online (Livingstone and Bulger, 2014[48]) and are more likely to report harm resulting from online risks (UNICEF, 2017[42]; Kardefelt-Winther, 2017[49]). Factors that make children more vulnerable to online risks include personality factors (such as low self-esteem, psychological difficulties and sensation-seeking), social factors (such as lack of parental support, peer norms) and digital factors (such as specific online practices, online sites and skills) (OECD, 2018[46]). Furthermore, children online tend to be more vulnerable than adults in terms of succumbing to clever marketing and advertising, and are not as good at distinguishing commercial from non-commercial content (OECD, 2014[47]). While children may think critically about the websites they visit, they tend to be less likely to understand search engine advertising (Ofcom, 2019[14]).

Table 2.1. An overview of online risks and opportunities

Type of risk	The child is the:	Opportunities	Risks
Content	Recipient	• receiving advice on personal or health issues • seeking out educational resources and information.	• advertising and spam • commercial advertising masquerading as news, or embedded marketing • receiving content that is pornographic, violent, racist, hateful or generally harmful.
Contact	Participant	• contacting others who share similar interests • sharing experiences or ideas with others • creating or participating in joint online activities.	• being bullied, harassed or stalked • meeting strangers and being groomed or succumbing to online fraud • tracking or harvesting of personal information (online privacy); personal data misuse.
Conduct	Actor	• civic engagement • self-initiated or collaborative learning • generating content and expressing identities/ideas.	• engaging in illegal activity such as downloading or hacking • bullying or harassing others • creating or uploading harmful material (i.e. pornography) • providing harmful advice (i.e. pertaining to suicide, eating disorders).

Source: Adapted from Staksrud et al. (2009[45]), OECD (2018[46]) and OECD (2014[47])

It is thus important that policies and practices target disadvantaged or vulnerable groups in terms of online protection, and fostering digital literacy and resilience. Children tend to be more aware of the risks associated with using digital technologies if schools integrate programmes aimed at developing digital literacy and technologies in the curriculum (Chaudron, Di Gioia and Gemo, 2018[15]).Young people should also be prepared to handle and understand various advertisements that are present in their lives.

Box 2.2 Facing risks to build resilience

Risks tend to feature more heavily in popular media than do opportunities. An analysis of media coverage of children and the Internet showed that 64% of coverage was on risks versus 18% on opportunities, with the most widely covered risks being pornography and cyberbullying (Livingstone et al., 2011[50]). This kind of attention can put children's online time in a negative shadow, overstate the potential for harm, and can overlook potential benefits, opportunities and the capacity of children to build resilience.

Children need to explore and encounter different online risks in order to develop digital skills and resilience. In a psychological sense, resilience refers to the interplay of different factors (i.e. social, relationship and dispositional) that help promote positive adjustment when facing adversity. In other words, despite facing risky situations or having negative experiences, some individuals end up having relatively good outcomes (Rutter, 2007[51]). Digital resilience thus refers to children having the ability to adjust positively when facing online adversity. Therefore, children need to be exposed to risk in order to build digital resilience (UNICEF, 2017[42]; Livingstone et al., 2011[50]).

Families can play an important role in mediating children's experiences online. Enabling and restrictive mediation are two broad strategies; parents who are more digitally skilled are more likely to adopt an enabling approach providing their children with more

opportunities as well as risks, whereas lower skilled parents are likely to adopt a restrictive approach thereby limiting opportunities and risks (Livingstone et al., 2017[52]). Enabling mediating seems to be a more effective and suitable approach, allowing children to embrace technologies and benefit from digital tools (Middaugh, Clark and Ballard, 2017[53]). This highlights the need for digital lifelong learning approaches in OECD countries to ensure that parents are up to speed with knowledge and skills to effectively use digital tools, as well as guide and moderate their children's online activities.

Schools have a role to play as well. Effective ways for schools to promote resilience can include training teachers in digital risks and implications, fostering a zero-tolerance approach to behaviours such as cyberbullying, and through incorporating ethics and e-safety learning opportunities in the curriculum (OECD, 2018[46]).

What about well-being?

The proliferation of digital technologies has been accompanied by increasing worry about children's well-being. Fears that smartphones are ruining a generation and that children are depressed because of technology are rampant in the media, and even in some research circles. Although the impact digital technologies have on children is not so clear, this moral panic is probably unwarranted as the literature tends to be inconclusive, and there is evidence of some beneficial effects of digital technology use. For example, they can use it to unwind, to find sources of moral and social support in times of need and to maintain social relationships, which are all beneficial for emotional health. Furthermore, the notion that using digital technologies "displaces" other more beneficial activities is controversial and critiqued (Kardefelt-Winther, 2017[49]; Gottschalk, 2019[54]).

According to PISA, "Extreme Internet users" reported less life satisfaction and were more likely to be bullied at school (OECD, 2017[7]). Extreme Internet users were also more likely to report feeling lonely at school than "high Internet users" (i.e. between 2-6 hours per day), "moderate Internet users" (i.e. between 1-2 hours per day) and "low Internet users (i.e. under 1 hour per day) (OECD, 2017[7]). Respondents also tended to report "feeling bad" when not connected, although this varies by country and gender. Despite the relationship in the PISA study between various emotional well-being outcomes and time spent online, the direction of the relationship is unclear. This is to say that it is unclear whether children with lower life satisfaction or who feel lonely spend more time online, or whether the time spent online results in these outcomes (see Box 2.3).

Links to behavioural outcomes, such as delinquency, risky behaviours, sexual behaviours and substance abuse are also weak for moderate or low Internet users. Even "excessive screen use" (in excess of 6 hours per day) in some research has been suggested to be only weakly correlated with depression and delinquency (Ferguson, 2017[56]). Some research reports a non-linear relationship between the two, suggesting there may be an "ideal" amount of screen time for children, and some is better than none or too much. This parabolic effect has been termed the "Goldilocks hypothesis" (Przybylski and Weinstein, 2017[57]). This hypothesis has been tested also in young children aged 2-5 (Przybylski and Weinstein, 2017[58]), and can be seen in cognitive outcomes as well. For example, PISA 2015 results suggest that in many countries high and moderate Internet users outperform both low and extreme Internet users (OECD, 2017[7]).

There is a growing body of evidence highlighting the weak relationship between screen time and mental well-being (see Chapter 8). Findings in this field tend to be inconsistent even when re-analysing the same data set, with many conflicting results, and tend to receive

much attention even when the correlations are quite small (Orben and Przybylski, 2019[59]; Gottschalk, 2019[54]). When a reported effect size is small, even if it is significant in a statistical sense, it is often unclear whether this has meaningful relevance in "real life". Despite the potential negative effects of technology on adolescent well-being, some scholars argue that the variation in well-being attributed to the use of digital technologies is too small to warrant policy change (Orben and Przybylski, 2019[59]).

Box 2.3. Correlation versus causation in the digital technologies and well-being debate

The vast majority of research examining the effects of screen time on well-being in children is correlational. This means that researchers are generally unable to say definitively that the use of digital technologies causes the outcome they measure; rather, they can state that it is related to, or correlated with, the outcome they measure.

There is a growing body of literature linking digital technologies to various child outcomes. These results tend to rely on large-scale social data that is cross-sectional (i.e. collected at one point in time); longitudinal data, which tracks the same sample at different points in time, is hard to come by. Unfortunately, "with correlational data, it is not possible to isolate the empirical system sufficiently so that the nature of the relations among the variables can be unambiguously ascertained" (Cliff, 1983[55]). Indeed correlational data can point towards a potential causal relationship; however, it is not possible to establish one on these points alone.

As with many areas of research, the ways in which digital technologies affect child development are difficult to test experimentally. Performing longitudinal studies can help the field advance on the causation versus correlation debate. For now, though, policy makers, parents and educators should be cautious and critically assess the correlational evidence presented to them in research and by the media. These results can be misleading and erroneously suggest causation thereby distorting opinions and recommendations about children's digital device use.

While parents, teachers and policy makers may fear a "rewiring" of children's brains attributed to their use of digital technology, major brain changes (and "rewiring") resulting from screen time are fortunately unlikely (Mills, 2014[60]). Child outcomes are determined by many different factors, such as experience, environment and genetics. Any inputs, including the use of technology, can have an impact on child development. However, the key is to maximise the potential benefits for cognition, and physical and social outcomes, while minimising risks and fostering resilience.

Developing successful policies

Generally, successful policies will focus on improvement of technological infrastructure and supporting digital skill development. Adequate infrastructure is a necessary precursor for digital skill development, and the richness of online content can also be a driver for skill development. Fostering children's digital skills through educational policies requires a coordinated effort including providing ICT in schools, teacher training and professional development opportunities, as well as support for the integration and implementation of ICTs in the curriculum (Hooft Graafland, 2018[13]). Furthermore, ensuring the availability of local language content can provide more online opportunities.

It is important to keep in mind that children, despite their early and frequent exposure to technology, need guidance on safe and responsible uses of technology. As mentioned previously, the idea that they are "digital natives" is contentious in research communities (see Chapter 9). It is essential therefore, that adults are adequately skilled and knowledgeable in the use of digital technologies, understanding both the risks and opportunities they afford, to be able to guide children in this realm effectively. The voices of children are also important to include in the policy debate, as this is often overlooked (Hooft Graafland, 2018[13]). It is also essential to base policies and guidelines on robust, high quality evidence (Gottschalk, 2019[54]).

Areas for further research

Despite the proliferation of research on this topic, there are still many unknowns when it comes to children and digital technologies. Currently, some of the issues in the research base are:

- There is a paucity of research on young children: the focus has historically been on adolescents and pre-teens, therefore filling the gap on how younger children engage with technology and how this affects different outcomes is necessary.
- There is a heavy emphasis on the negative aspects of digital technology use such as risks and maladaptive behaviours: it is critical to expand the knowledge base on the different online opportunities children can harness, both in personal and educational settings.
- There is a strong focus on certain risks while others remain relatively unstudied. For example, there is little research to date on "cyber bystanders", or children who witness cyberbullying online, despite not being the perpetrator or victim.
- Research tends to be behind the curve: by the time certain developments are studied, they may be obsolete or overshadowed by newer developments. The ebb and flow in popularity of different platforms makes it difficult to study and understand the impacts on children, and on parents (see Chapter 6).
- Research regarding health and well-being tends to be weak: the research base often focuses on correlational results using cross-sectional study design. There is thus a need for longitudinal data, and to assess how and why children use technology (not just that they are using it, which is inevitable). Furthermore, linking effect sizes to real world outcomes is important.

High priority challenges in OECD countries and systems

The proliferation of digital technologies in the 21st century has put children's use, learning and access to technologies high on the international policy agenda. It is undeniable that digital skills are necessary for life and effective participation in 21st century labour markets and education systems. Protecting and guiding children online, while still allowing them to be children, and learn and build resilience from making mistakes, is essential. The 21st Century Children Policy Questionnaire asked systems to identify which of the following challenges they face in their national or regional context, as well as which were most pressing in terms of policy priorities. Twenty-four countries responded to this section of the Policy Questionnaire, and Table 2.2 outlines these responses.

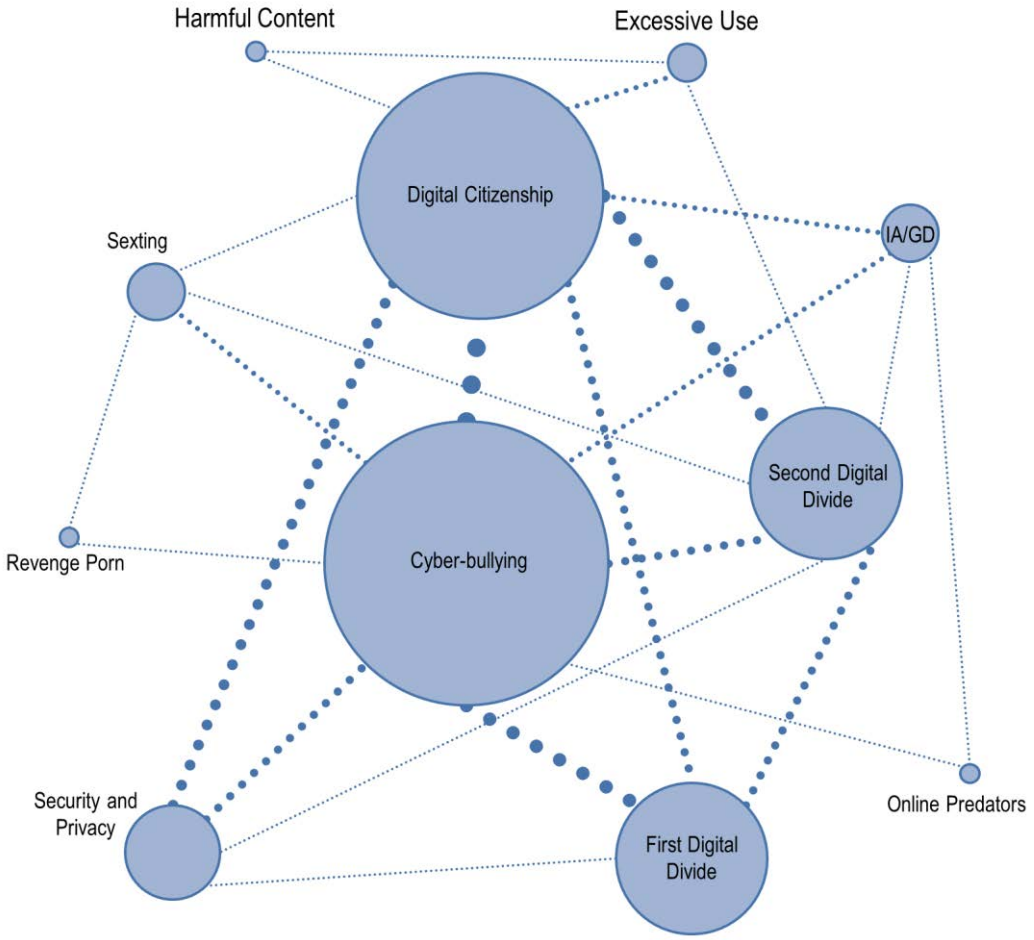
Table 2.2. Overview of priorities and pressing challenges in digital technologies across countries and systems

	Total Challenges	Total Most Pressing Challenges	AUS	BEL-FL	BEL-FR	CAN	CHE	CZE	DNK	ESP	FRA	GBR(SC)	GRC	IRL	JPN	KOR	LUX	LVA	MEX	NLD	NOR	PRT	RUS	SWE	TUR	USA
Digital Citizenship	22	13		●		●	●		●		●		●				●	●	●		●		●		●	●
Cyber-bullying	20	15	●		●	●			●	●	●	●	●	●		●		●		●			●			●
Excessive Use	20	2					●																		●	
Second Digital Divide	19	8			●									●			●		●		●	●	●		●	
IA/GD*	18	3								●			●				●									
Harmful Content	17	1					●																			
Security and Privacy	17	5		●					●		●	●									●					
Sexting	16	3																●		●		●				
Online Predators	15	1								●																
First Digital Divide	14	8	●		●	●		●				●		●					●							●
Revenge Porn	12	1																		●						

Note: 24 of 26 systems responded to this question. Number of challenges (depicted in light blue) was unlimited; most pressing (depicted with a white dot) was limited to three options.
*IA=Internet addiction, GD=Gaming disorder
Source: 21st Century Children Policy Questionnaire

Systems were generally concerned about how children conduct themselves online, with particular focus on developing digital citizenship, cyberbullying, and excessive social media and Internet use. Across countries, cyberbullying was the challenge most consistently at the forefront of the policy agenda, as reflected by the 15 systems that identified this as a "pressing challenge" in their context, highlighting the "perceived intensity" of the issue. Cyberbullying has implications not only for online outcomes, but can affect emotional well-being and academic outcomes of students. The intersectional nature of this challenge was highlighted by systems.

Figure 2.3. Links between most pressing challenges



Source: 21st Century Children Policy Questionnaire
Note: The width of the connectors reflects the number of times the respective challenges were selected together. The size of the circles reflects the number of times each challenge was selected as pressing.

In order for children to conduct themselves online, there is a need for a certain level of digital skill. However, in many OECD countries there is an increasing gap between those who are highly versus lowly skilled in terms of ICT and online skills (Hooft Graafland, 2018[13]). This was reflected in the responses, as the second digital divide was noted as a policy issue in 19 different systems, and as a priority in 8. Conversely, the first digital divide was noted to be less of a policy concern consistently across surveyed countries.

However, countries that noted the first digital divide as a challenge were also likely to state that it is pressing, suggesting a higher level of perceived intensity of this challenge across countries. Large countries and those with large rural populations reported facing the first digital divide as a pressing policy priority. Indeed, as noted previously, large differences exist within OECD countries regarding provision and quality of broadband.

It is clear from the most pressing challenges identified that there is overlap in concern among digital skills and behaviours, especially the second digital divide, cyberbullying and digital citizenship. Countries that indicated cyberbullying as a pressing challenge were also likely to indicate digital citizenship as a pressing challenge (see Figure 2.3). Digital citizenship encompasses factors such as access and inclusion, media and information literacy, ethics, and privacy and security (Council of Europe, 2019[61]); therefore it is understandable that countries that are also concerned with children's online behaviours and outcomes are facing developing digital citizenship as a challenge. Often, programmes targeting other behaviours online, such as cyberbullying, feature a digital citizenship component. For example, Common Sense Media in 2012 developed a media education programme for digital citizenship education, with foci on topics such as cyberbullying, copyright and privacy (Common Sense Media, 2012[62]). Digital citizenship education can be both a preventative and a reactive measure to online behavioural issues.

In sum

Digital technologies are a reality in the lives of children in the 21st century. The ways in which children seek out information, socialise, play and learn have all been affected by the rise of new technologies. The data suggests that children are going online more often, for longer, at younger ages, with more devices and for different purposes. Despite the opportunities the Internet affords, there are accompanying risks and not all children can benefit equally from potential opportunities online.

Despite the burgeoning body of research in this field, methodological issues, quality issues and difficulty discerning what outcomes are actually caused by children's use of digital technologies remain contentious. There are a myriad of topics requiring more research to fill the knowledge gaps, and to determine how to protect children effectively from emerging risks while encouraging them to take up all available opportunities.

Policy makers are cognisant of these challenges, and many countries are facing obstacles regarding access, different online risks and developing a generation of ethical online users. Many systems implement a range of policies and programmes targeted at these challenges, which will be explored further in this volume.

References

Chaudron, S., R. Di Gioia and M. Gemo (2018), *Young Children (0-8) and Digital Technology, a Qualitative Study Across Europe*, European Union, http://dx.doi.org/10.2760/294383. [15]

Cliff, N. (1983), "Some cautions concerning the application of causal modeling methods", *Multivariate Behavioral Research*, Vol. 18/1, pp. 115-126, http://dx.doi.org/10.1207/s15327906mbr1801_7. [55]

Common Sense Media (2012), *K-12 Digital Literacy and Citizenship Curriculum: Scope and Sequency Tool*, http://commonsensemedia.org/educators/scope-and-sequence. [62]

Council of Europe (2019), *Digital Citizenship Education Handbook*, Council of Europe Publishing, Strasbourg. [61]

DiMaggio, P. and F. Garip (2012), "Network effects and social inequality", *Annual Review of Sociology*, Vol. 38/1, pp. 93-118, http://dx.doi.org/10.1146/annurev.soc.012809.102545. [38]

Druga, S. et al. (2017), ""Hey Google is it OK if I eat you?"", *Proceedings of the 2017 Conference on Interaction Design and Children - IDC '17*, http://dx.doi.org/10.1145/3078072.3084330. [33]

Eurostat (2018), *Digital Economy and Society Statistics - Households and Individuals*, https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals#Internet_access. [8]

Eurostat (2017), *Being Young in Europe Today - Digital World*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being_young_in_Europe_today_-_digital_world#A_digital_age_divide. [9]

Ferguson, C. (2017), "Everything in moderation: Moderate use of screens unassociated with child behavior problems", *Psychiatric Quarterly*, Vol. 88/4, pp. 797-805, http://dx.doi.org/10.1007/s11126-016-9486-3. [56]

Gonzales, A. (2016), "The contemporary US digital divide: From initial access to technology maintenance", *Information, Communication & Society*, Vol. 19/2, pp. 234-248, http://dx.doi.org/10.1080/1369118X.2015.1050438. [39]

Gottschalk, F. (2019), "Impacts of technology use on children: Exploring literature on the brain, cognition and well-being", *OECD Education Working Papers*, No. 195, OECD Publishing, Paris, https://dx.doi.org/10.1787/8296464e-en. [54]

Hargittai, E. (2002), "Second-level digital divide: Differences in people's online skills", *First Monday*, Vol. 7/4, http://dx.doi.org/10.5210/fm.v7i4.942. [40]

Helsper, E. and R. Eynon (2010), "Digital natives: Where is the evidence?", *British Educational Research Journal*, Vol. 36/3, pp. 503-520, http://dx.doi.org/10.1080/01411920902989227. [16]

Helsper, E., A. Van Deursen and R. Eynon (2015), *Tangible Outcomes of Internet Use: From Digital Skills to Tangible Outcomes Project Report*, http://oii.ox.ac.uk/research/projects/?id=112. [5]

Holloway, D. and L. Green (2016), "The Internet of toys", *Communication Research and Practice*, Vol. 2/4, pp. 506-519, http://dx.doi.org/10.1080/22041451.2016.1266124. [32]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [13]

Hopkins, L., F. Brookes and J. Green (2013), "Books, bytes and brains: The implications of new knowledge for children's early literacy learning", *Australasian Journal of Early Childhood*, Vol. 38/1, pp. 23-28. [12]

Kardefelt-Winther, D. (2017), "How does the time children spend using digital technology impact their mental well-being, social relationships and physical activity? An evidence-focused literature review", *Innocenti Discussion Paper 2017-02*, UNICEF Office of Research – Innocenti, Florence, https://unicef-irc.org/publications/pdf/Children-digital-technology-wellbeing.pdf. [49]

Lenhart, A. (2015), *Teens, social media & technology: Overview 2015*, Pew Research Center, http://pewinternet.org/2015/04/09/teens-social-media-technology-2015/. [28]

Livingstone, S. et al. (2018), *In the Digital Home, How Do Parents Support Their Children and Who Supports Them? Parenting for a Digital Future: Survey Report 1*, LSE, London. [20]

Livingstone, S. and M. Bulger (2014), "A global research agenda for children's rights in the digital age", *Journal of Children and Media*, Vol. 8/4, pp. 317-335, http://dx.doi.org/10.1080/17482798.2014.961496. [48]

Livingstone, S. et al. (2011), *EU Kids Online: Final Report 2011*, EU Kids Online, London, http://eprints.lse.ac.uk/id/eprint/45490. [50]

Livingstone, S. et al. (2011), *Risks and Safety on the Internet: The Perspective of European Children: Full Findings and Policy Implications From the EU Kids Online Survey of 9-16 Year Olds and Their Parents in 25 Countries*, LSE: EU Kids online, http://eprints.lse.ac.uk/33731/. [4]

Livingstone, S. and E. Helsper (2007), "Gradations in digital inclusion: Children, young people and the digital divide", *New Media & Society*, Vol. 9/4, http://dx.doi.org/10.1177/1461444807080335. [44]

Livingstone, S. et al. (2017), "Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation", *Journal of Communication*, Vol. 67/1, pp. 82-105, http://dx.doi.org/10.1111/jcom.12277. [52]

Manches, A. et al. (2015), "Three questions about the Internet of things and children", *TechTrends*, Vol. 59/1, pp. 76-83, http://dx.doi.org/10.1007/s11528-014-0824-8. [30]

Marsh, J. et al. (2018), "Play and creativity in young children's use of apps", *British Journal of Educational Technology*, Vol. 49/5, http://dx.doi.org/10.1111/bjet.12622. [22]

Marsh, J. et al. (2015), *Exploring Play and Creativity in Pre-schoolers' Use of Apps: Final Project Report*, www.techandplay.org. [10]

Mascheroni, G. and D. Holloway (2017), *The Internet of Toys: A Report on Media and Social Discourses Around Young Dhildren and IoToys*, DigiLitEY, https://publicatt.unicatt.it/handle/10807/103759#.XOVrr8gzZpg. [31]

Mascheroni, G. and K. Ólafsson (2014), *Net Children Go Mobile: Risks and Opportunities*, Educatt, Milano, http://netchildrengomobile.eu. [24]

Middaugh, E., L. Clark and P. Ballard (2017), "Digital media, participatory politics, and positive youth development", *Pediatrics*, Vol. 140/Suppl 2, pp. S127-S131, http://dx.doi.org/10.1542/peds.2016-1758Q. [53]

Mills, K. (2014), "Effects of Internet use on the adolescent brain: Despite popular claims, experimental evidence remains scarce", *Trends in Cognitive Sciences*, Vol. 18/8, pp. 385-387, http://dx.doi.org/10.1016/J.TICS.2014.04.011. [60]

Nevski, E. and A. Siibak (2016), "The role of parents and parental mediation on 0–3-year olds' digital play with smart devices: Estonian parents' attitudes and practices", *Early Years*, Vol. 36/3, pp. 227-241, http://dx.doi.org/10.1080/09575146.2016.1161601. [21]

OECD (2019), *Going Digital: Shaping Policies, Improving Lives*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264312012-en. [34]

OECD (2019), *Measuring Distance to the SDG Targets 2019: An Assessment of Where OECD Countries Stand*, OECD Publishing, Paris, https://dx.doi.org/10.1787/a8caf3fa-en. [1]

OECD (2019), *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264311992-en. [11]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [2]

OECD (2018), "A brave new world: Technology and education", *Trends Shaping Education Spotlights*, No. 15, OECD Publishing, Paris, https://dx.doi.org/10.1787/9b181d3c-en. [46]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [7]

OECD (2017), *Starting Strong V: Transitions from Early Childhood Education and Care to Primary Education*, Starting Strong, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264276253-en. [19]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [43]

OECD (2016), *Policy Brief on the Future of Work: Skills for a Digital World*, http://oecd.org/els/emp/Skills-for-a-Digital-World.pdf. [41]

OECD (2016), *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-en. [3]

OECD (2015), *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264239555-en. [25]

OECD (2014), "Infinite connections: Education and new technologies", *Trends Shaping Education Spotlights*, No. 5, OECD Publishing, Paris, https://dx.doi.org/10.1787/79ac3b84-en. [47]

OECD (2012), *Connected Minds: Technology and Today's Learners*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264111011-en. [18]

Ofcom (2019), *Children and Parents: Media Use and Attitudes Report 2018*, https://ofcom.org.uk/__data/assets/pdf_file/0024/134907/Children-and-Parents-Media-Use-and-Attitudes-2018.pdf. [14]

Orben, A. and A. Przybylski (2019), "The association between adolescent well-being and digital technology use", *Nature Human Behaviour*, Vol. 3/2, pp. 173-182, http://dx.doi.org/10.1038/s41562-018-0506-1. [59]

Pascual-Espada, J. et al. (2011), "Virtual objects on the Internet of things", *International Journal of Interactive Multimedia and Artificial Intelligence*, Vol. 1/Special Issue on Computer Science and Software Engineering, https://ijimai.org/journal/node/184. [29]

Pedró, F. et al. (2019), "Artificial intelligence in education: Challenges and opportunities for sustainable development", UNESCO, Paris, https://unesdoc.unesco.org/ark:/48223/pf0000366994. [35]

Peter, J. and P. Valkenburg (2006), "Adolescents' internet use: Testing the 'disappearing digital divide' versus the 'emerging digital differentiation' approach", *Poetics*, Vol. 34/4-5, pp. 293-305, http://dx.doi.org/10.1016/J.POETIC.2006.05.005. [23]

Pew Research Center (2018), *Teens, Social Media and Technology 2018*. [27]

Przybylski, A. and N. Weinstein (2017), "A large-scale test of the Goldilocks Hypothesis", *Psychological Science*, Vol. 28/2, pp. 204-215, http://dx.doi.org/10.1177/0956797616678438. [57]

Przybylski, A. and N. Weinstein (2017), "Digital screen time limits and young children's psychological well-being: Evidence from a population-based study", *Child Development*, http://dx.doi.org/10.1111/cdev.13007. [58]

Rideout, V. (2015), *The Common Sense Census: Media Use by Tweens and Teens*, Common Sense. [26]

Robinson, L. et al. (2015), "Digital inequalities and why they matter", *Information Communication and Society*, Vol. 18/5, pp. 569-582, http://dx.doi.org/10.1080/1369118X.2015.1012532. [37]

Rutter, M. (2007), "Resilience, competence, and coping", *Child Abuse & Neglect*, Vol. 31/3, pp. 205-209, http://dx.doi.org/10.1016/J.CHIABU.2007.02.001. [51]

Selwyn, N. (2009), "The digital native-myth and reality", *Aslib Proceedings: New Information Perspectives*, Vol. 61/4, pp. 364-379, http://dx.doi.org/10.1108/00012530910973776. [17]

Staksrud, E. et al. (2009), *What Do We Know About Children's Use of Online Technologies? A Report on Data Availability and Research Gaps in Europe*, EU Kids Online, LSE, http://eprints.lse.ac.uk/24367/. [45]

Uncapher, M. et al. (2017), "Media multitasking and cognitive, psychological, neural, and learning differences", *Pediatrics*, Vol. 140/Supplement 2, pp. S62-S66, http://dx.doi.org/10.1542/PEDS.2016-1758D. [36]

UNICEF (2017), *The State of the World's Children: Children in a Digital World*, https://unicef.org/publications/index_101992.html. [42]

United Nations Assembly (1989), *Convention on the Rights of the Child*, United Nations Human Rights Office of the High Commissioner, New York, NY, https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1007&context=child. [6]

Chapter 3. Trends in children's emotional well-being

Emotional well-being is vital for our health and everyday life. A large body of research documents the long-term benefits of developing social and emotional skills and a positive mental health state during childhood and adolescence. These are crucial developmental periods and research demonstrates that they can be important predictors of emotional well-being later in life since many adult mental health disorders originate during this period. This chapter will provide an overview of some of the long-term trends and challenges in children's emotional well-being, including internalising (e.g. anxiety and depression) and externalising behaviours (e.g. bullying and cyberbullying). It will also look specifically at policy priorities and challenges faced by OECD countries and systems.

Why is emotional well-being so important?

Emotional well-being is vital for our health and everyday life. It is an important element of our overall well-being (Pollard and Lee, 2003[1]), happiness and confidence, and is essential for a "good quality of life" (Morgan et al., 2007[2]). A large body of research documents the benefits of developing social and emotional skills and positive mental health during the early years and demonstrates how these can be important predictors of emotional well-being later in life. For example, longitudinal data analysis shows that 14-year-olds in Korea who have a high sense of responsibility are less likely to suffer from depression at age 19; kindergarten students in the United States in the top decile of the social and emotional skills distribution are less likely to report that they are depressed in grade 8; and 15- to 19-year-olds in Norway with high levels of self-confidence are less likely to report depression between ages 26 to 31 (OECD, 2015[3]).

Childhood and adolescence are crucial developmental periods. In terms of brain development, these stages of life are when many brain structures and neurosystems are rapidly maturing. This has implications for cognitive functioning, emotion regulation, motivation and social interactions (Paus, Keshavan and Giedd, 2008[4]). In fact, adolescence is increasingly understood to be a sensitive period of development, with both increased developmental opportunities as well as risks, particularly for mental illness (Fuhrmann, Knoll and Blakemore, 2015[5]).

Developmental risks and opportunities in childhood have implications for future well-being outcomes. There is significant evidence that adult mental health disorders can originate during childhood or adolescence (Paus, Keshavan and Giedd, 2008[4]; Kieling et al., 2011[6]; Jones, 2013[7]; WHO, 2017[8]). For example, nearly one in two adult mental health problems begin by age 14 and 75% by the mid-20s (WHO, 2017[8]). However treatment usually does not begin until later due to stigma, lack of awareness and other cultural or social norms (Choi, 2018[9]). It is important to examine the causes and contributing factors and to detect mental health problems earlier – before conditions become chronic and serious (Morgan et al., 2007[2]; OECD, 2015[3]).

Defining emotional well-being and mental health

Well-being has become an increasingly popular area of research (Dodge et al., 2012[10]) and policy (Choi, 2018[9]). However, there is little consensus around how it should be defined, with research often focusing on dimensions of well-being rather than a general definition (Dodge et al., 2012[10]). This chapter focuses on emotional well-being, often referred to as "hedonic well-being", which signifies the quality of an individual's emotions and experiences (i.e. sadness, anxiety, worry, happiness, stress depression, anger, joy and affection) that leads to unpleasant or pleasant feelings (Choi, 2018[9]).

Emotional well-being is generally seen as a core component of positive mental health (Westerhof and Keyes, 2010[11]). The World Health Organisation (WHO) defines mental health as "A state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community," (2018[12]). Another review outlines two dimensions of mental health: the positive (well-being and coping with difficulties) and the negative (symptoms and disorders). Positive mental health does not solely mean the absence of symptoms like anxiety or depression, but also includes other factors like happiness, self-esteem and balanced emotions (Korkeila et al., 2003[13]).

Despite the importance of emotional well-being, its indicators are not always explicitly included in frameworks for child well-being. This may be due to the challenging nature of defining its scope and measuring its components (Choi, 2018[9]). Part of the reason for this could also be due to the interdependent nature of the different dimensions of overall well-being, since dimensions can affect and be affected by one another (Choi, 2018[9]).

This chapter will provide an overview of recent trends in children's emotional well-being. It will also look specifically at policy priorities and challenges faced by OECD countries and systems.

Mental health and emotional well-being trends among youth

Table 3.1. Summary of trends in emotional well-being

Emotional well-being outcome measures	Trend direction
Mental health issues • **Anxiety and depression** • **Eating disorders and appearance-related social pressure**	• Increasing, cross-country variation** • Stable*
School-related anxiety and stress	Stable*
Life satisfaction	Stable, cross-country variation*
Subjective health complaints (e.g. feeling low)	Stable, cross-country variation*
Bullying* **	Decreasing*
Suicide	Decreasing, cross-country variation**

Note: These trends are based on data from 2001 up until 2014* and 2015**. Stable refers to no significant change in either direction.
***This does not include cyberbullying since no long-term comparative cross-country data are available.
Source: Choi (2018[9]) and HBSC Data Management Centre (2016[14])

While there has been a significant increase in the number of children and adolescents reporting symptoms of mental health problems and psychiatric disorders over the past few decades (Costello, Copeland and Angold, 2011[15]; Olfson et al., 2014[16]), Table 3.1 shows that other issues are becoming less prevalent. This section will provide an overview of emotional well-being trends in youth.

Mental health issues

Overall, about 10% to 20% of children and adolescents in the world suffer from mental health problems and ill-being (Kieling et al., 2011[6]; Henderson et al., 2017[17]), and evidence suggests that some problems are becoming more prevalent among youth (Choi, 2018[9]). Mental illness has become a worry for adolescent girls in particular, for whom many studies report a concerning increase in mental problems (Bor et al., 2014[18]; Blomqvist et al., 2019[19]).

The increase in prevalence might be due to growing awareness and help-seeking behaviours among youth and their parents, which are related to enhanced screening and diagnosis as well as a broader classification of disorders (Collishaw, 2015[20]). However, the rise in mental health problems among youth may have also captured a true increase in prevalence, particularly as some conditions are difficult to detect and diagnose at earlier ages, meaning that they have been more susceptible to under-reporting (Choi, 2018[9]).

Psychiatric disorders during childhood and adolescence are negatively related to emotional well-being, health and education both in the short and long run (Collishaw, 2015[20]). The recurrence of chronic conditions can also lead to further issues. For example, depression during adolescence is associated with negative physical and mental health outcomes such

as suicidal thinking and attempts as well as problems with social functioning (Maughan, Collishaw and Stringaris, 2013[21]).

Box 3.1. Taboos around mental illness

Stigma, lack of awareness and other social and cultural norms around mental illness during childhood and adolescence can lead to treatment not beginning until later in life. In fact, "stigma and discrimination in relation to mental illnesses have been described as having worse consequences than the conditions themselves" (Thornicroft et al., 2016[22]). This is concerning given that studies suggest that adult mental health disorders mostly originate during childhood or adolescence (Choi, 2018[9]).

Developing awareness around the issue is crucial. One example comes from the Flemish Community of Belgium, which developed national awareness campaigns called *Rode Neuzen Dag* and *Te Gek!?* ("it's ok that you fall occasionally…") to discuss mental health issues and challenge the stigma. Some education ministries have also integrated discussions around mental health in the curriculum to increase awareness, as in Scotland's (United Kingdom) Curriculum for Excellence.

It is important to note that as awareness of mental health issues grows there tends to be a corresponding increased demand for treatment. Waitlists for child and adolescent mental health services have significantly grown over the past few years in many jurisdictions, including Scotland (Murphy, 2016[23]) and Ontario (Canada) (Gandhi et al., 2016[24]). For education, this has implications in how and when students with mental health challenges are identified, and how they are supported both in and out of the classroom. This requires involving health care authorities in the planning and implementation processes of intervention policies in order to ensure a comprehensive and coherent response.

Anxiety and depression

There is evidence that the prevalence of anxiety and depression has been increasing since the 1980s in many countries, with more adolescents reporting symptoms in Germany, Greece, Iceland, New Zealand, Norway, People's Republic of China and Sweden (Choi, 2018[9]). Rates of depression among American adolescents increased from almost 9% to just over 11% between 2005 and 2014 (Mojtabai, Olfson and Han, 2016[25]).

Numerous factors have been associated with depression including "chronic stress related to the pressure to succeed in school, family instability, poverty, sleep deprivation, low self-esteem or self-confidence, and poor social relations with peers, parents and teachers," as well as bullying (OECD, 2018[26]). Adolescents' mental health is also an important predictor of educational achievement and mediates the association between poverty and educational achievement (Sznitman, Reisel and Romer, 2011[27]).

Eating disorders and appearance-related social pressure

While research confirms that eating disorders are much less common relative to other mental health problems, they risk becoming serious conditions for affected youth, with girls much more likely than boys to show symptoms (Costello, Copeland and Angold, 2011[15]). Various research studies from different countries ranging from between 1999 and 2013 have found either no change or decreasing prevalence rates of anorexia and bulimia nervosa (Litmanen et al., 2017[28]; Loth et al., 2015[29]; Keski-Rahkonen and Mustelin, 2016[30]),

while the proportion of students responding to Health Behaviour in School-Aged Children (HBSC)[1] perceiving their bodies to be too fat has remained stable at 29% between 2001 and 2014 (HBSC Data Management Centre, 2016[14]).

School-related anxiety and stress

A high proportion of 11-, 13- and 15-year-old of students (35%) report feeling some or a lot of pressure from schoolwork, though this proportion has remained stable on average between 2001 and 2014 (WHO, 2016[31]; HBSC Data Management Centre, 2016[14]). This pressure on children comes from peers, parents and teachers, as well as from their personal motivation to excel in their academic achievement. This can manifest itself in worry and anxiety about doing well on exams, getting good grades, and being admitted to post-secondary education programmes, especially in competitive schools (OECD, 2017[32]). This anxiety manifests as a result of their reaction to and interpretation of mistakes made or that they are afraid to make and could be reinforced by factors like a competitive school climate and long study hours. Girls generally report higher school-related anxiety and pressure than boys (OECD, 2017[32]; WHO, 2016[31]). Stressors around academic work and the perception of schoolwork as demanding have also been associated with depressive symptoms (Moksnes et al., 2016[33]), more frequent subjective health complaints and lower levels of life satisfaction (WHO, 2016[31]).

Life satisfaction

Students who reported the highest levels of school-related anxiety also reported lower life satisfaction levels on average across OECD countries in the 2015 Programme for International Student Assessment (PISA) survey (OECD, 2017[32]). Generally, life satisfaction decreases with age, though the decrease between ages 11 and 15 is larger among girls than it is for boys. Overall, life satisfaction is also lower among girls than boys (WHO, 2016[31]; Goldbeck et al., 2007[34]). PISA 2015 confirms this pattern by gender, as girls reported lower average life satisfaction than boys in all countries with available data (OECD, 2017[32]).

Trends over time in reported life satisfaction paint an inconsistent picture, with variations between countries. Using HBSC data from 2002 to 2010, Cavallo and colleagues (2015[35]) identified 12 European and North American countries showing an increase in rates of life satisfaction, 12 with stable rates and 7 with decreasing rates. Overall rates between 2006 and 2014 remained stable (HBSC Data Management Centre, 2016[14]).

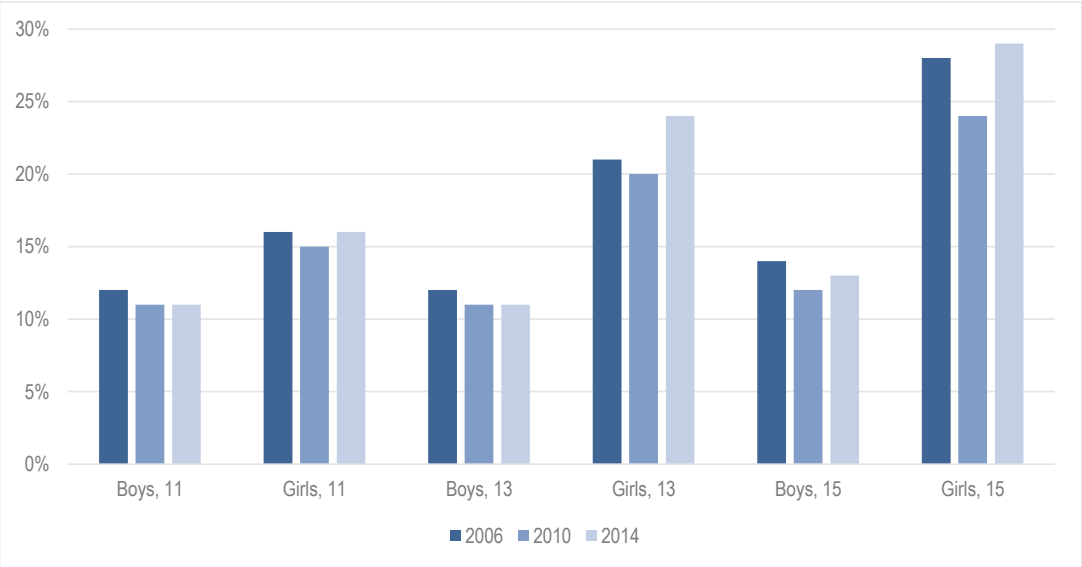
Subjective health complaints (e.g. feeling low)

While it is normal for children and adolescents to have subjective health complaints (e.g. headaches, stomach-aches, feeling low, irritability or bad temper) from time to time, these can have a significant negative impact on emotional well-being when experienced regularly and over prolonged periods. Generally, as children grow older, an increasing proportion of them report multiple subjective health complaints at least once per week, with an increase from 13% at age 11 to 21% at age 15 reporting feeling low, for example (WHO, 2016[31]). A meta-analysis of national and international studies from 1982-2013 across 36 countries found that subjective health complaints have remained stable in the 21st century (Potrebny, Wiium and Lundegård, 2017[36]), though many countries have seen an increasing trend in reports of feeling low (Choi, 2018[9]).

In addition to age, socio-economic status and gender are differentially associated with feeling low. Disadvantaged students are more likely to report feeling low than their more

affluent peers. Girls are also more likely than boys to report feeling low, and there is a steeper increase with self-reported feeling low associated with age. As of 2014, 29% of girls at age 15 reported feeling low at least once per week versus only 13% of boys (WHO, 2016[31]). Figure 3.1 shows that while the proportion of male adolescents reporting feeling low has remained stable on average between 2006 and 2014, the proportion of 13- and 15-year-old girls has increased.

Figure 3.1. Prevalence of adolescents reporting feeling low more than once a week (2006-2014)



Source: Adapted from HBSC Data Management Centre (2016[14]) and WHO (2016[31])
Note: Prevalence based on unweighted averages for 34 countries that provided data over all three cycles.

Bullying

Rates of bullying and victimisation (both occasional and chronic) have been decreasing in most of the countries with available data between 1994 and 2014, although cross-country variation exists (UNESCO, 2019[37]; HBSC Data Management Centre, 2016[14]). Nonetheless, it remains an important issue: according to PISA 2015 data, 19% of students reported being bullied (all types: relational (i.e. social exclusion), physical (i.e. hitting, punching or kicking), verbal (name-calling or mocking)) at least a few times a month on average across OECD countries. Verbal bullying and relational bullying were the most common forms reported, though there were differences between boys and girls, with boys more likely to report being victims of physical bullying and girls more likely to report being victims of nasty rumours (OECD, 2017[32]). In terms of being the bully, boys significantly more often reported bullying others than girls, according to HBSC data. In addition, on average as age increases being bullied decreases, whereas the opposite is true for being the bully which is more common at age 15 than age 11 (WHO, 2016[31]).

While bullying has been decreasing on average in many OECD countries, it still affects many children in the world and has lasting adverse consequences. Adolescents who are victims or bullies are more likely to have depressive and anxiety symptoms, low self-esteem, feel lonely and lose interest in activities (Kochel, Ladd and Rudolph, 2012[38]; Swearer and Hymel, 2015[39]). Bullying also has negative influences on bystanders who

report feelings of guilt or helplessness (Huitsing and Veenstra, 2012[40]; Molcho et al., 2009[41]). These adverse effects can persist into adulthood with consequences such as lower participation in the labour force (Drydakis, 2014[42]).

Box 3.2. Vulnerable groups

Certain groups of students are more likely to face challenges for emotional well-being. For example, students identifying as homosexual were three times more likely to be bullied than their heterosexual peers, while students identifying as transgender were five times more likely to experience bullying than their peers in one New Zealand study (Lucassen et al., 2014[43]). A UNESCO review confirms this pattern globally, with proportions as high as 85% of LGBTQ+ (lesbian, gay, bisexual, transgender and queer+) students reporting being bullied in the case of the United States (UNESCO, 2016[44]). Students with disabilities and ethnic minority groups, including Maori and Pacific peoples in New Zealand and indigenous peoples in Australia and Canada, are also more vulnerable to bullying. These students are more prone to other emotional well-being challenges as well, such as mental health issues and are more likely to commit suicide.

These are intersecting issues, and mental health conditions and bullying are contributing factors to higher risks of youth suicide and suicidal thinking among vulnerable youth (McLoughlin, Gould and Malone, 2015[45]; Mueller et al., 2015[46]). This complexity makes finding effective interventions and policy solutions particularly challenging.

Cyberbullying

Bullying has evolved over time, as it takes on new forms and shifts to online spaces in the form of cyberbullying, accompanying the rise in smartphones, social media and other communicative technologies (Choi, 2018[9]). Cyberbullying remains less prevalent than traditional forms of bullying, although is highly correlated with traditional bullying (Modecki et al., 2014[47]). In 2013, between 0% and 12% of youth reported experiencing cyberbullying victimisation (e.g. "mean instant messages, wall-posts, emails and text messages, or creating a web page that made fun of them," (Choi, 2018[9]; WHO, 2016[31]).

Like traditional bullying, cyberbullying can have serious adverse effects on children's well-being. Research has highlighted significant relationships between cyberbullying and mental health issues such as anxiety and depression. Cyberbullying has also been related to behavioural challenges such as lack of focus (particularly in school), anger and hostile behaviour, and truancy, which can adversely affect students' achievement and emotional well-being (Choi, 2018[9]; Tokunaga, 2010[48]). Cyberbullying can also be associated with suicidal thoughts or behaviour (Brailovskaia, Teismann and Margraf, 2018[49]).

Suicide

Adolescent suicide rates have decreased on average since 1990 from 8.5 suicides per 100 000 teenagers (15- to 19-year-olds) to 7.4 in 2015. Much of this decrease occurred in the 2000s. However, some countries have seen worrying increases in teen suicide over this time period such as Japan, Korea, Latvia, Mexico and New Zealand (OECD, 2017[50]).

Tendencies differ among boys and girls, with higher rates of suicide for boys while girls have higher rates of suicidality (i.e. suicidal thoughts, self-harm, suicide attempts and suicide) (McLoughlin, Gould and Malone, 2015[45]). More recently, some countries, such

as the United States, have seen an increase in suicides among girls relative to boys, and a greater increase among 10- to 14-year-olds than for 15- to 19-year-olds (Ruch et al., 2019[51]). Ruch and colleagues (2019[51]) argue that this narrowing of the gap could be due to girls using more violent and lethal methods. Research has confirmed a strong link between youth suicide and depression and other mental health problems (Collishaw, 2015[20]; Mojtabai, Olfson and Han, 2016[25]).

Evolving factors influencing emotional well-being outcomes

Changing social and economic conditions

The causal relationship between family poverty and child emotional well-being has been well established (Yoshikawa, Aber and Beardslee, 2012[52]). More broadly, social and economic conditions of a country can also play a role in children's emotional well-being by affecting individual families and their overall financial resources as well as external and internal pressure and concerns about the future (Ottova-Jordan et al., 2015[53]).

Many OECD countries experienced economic growth and prosperity over the past decades. However, income inequality has also increased between and within countries (OECD, 2019[54]). While higher family incomes are generally associated with higher life satisfaction and lower levels of negative emotional experiences (Kahneman and Deaton, 2010[55]), this association is weaker in countries with higher income inequality (Ng and Diener, 2019[56]). This pattern holds true for 15-year-olds across OECD countries, with those whose relative family wealth was lower than that of their peers at school reporting significantly lower life satisfaction levels even after accounting for socio-economic status (OECD, 2017[32]). Analysis using HBSC data also shows that exposure to income inequality during early childhood (0-4 years) predicted lower life satisfaction and psychosomatic symptoms for female adolescents (Elgar et al., 2017[57]).

Increasing migration

As OECD countries experience an increasing flow of migration, children in these countries are more likely to meet and interact with peers and teachers from different cultural backgrounds. This may pose new challenges around migrant students' integration into different school communities (OECD, 2017[32]). For example, due to differences in culture, language, race and ethnicity, first generation immigrant children face higher rates of bullying victimisation than third generation and native born children (Pottie et al., 2015[58]). Children who arrived as migrants between 13 and 16 years of age are also more likely to report higher levels of bullying victimisation at school than students who arrived earlier (OECD, 2017[32]). Furthermore, children who are forcibly displaced face a number of risk factors for their emotional well-being. Mental health challenges in this population may be compounded by trauma from experiences in their home country, in the displacement itself and in the readjustment to the new context (see Chapter 7).

Changing family structures

Over the last two decades, families have changed on a number of fronts: increasing rates of divorce, older parents, children born outside of marriage and single parent households. The share of divorced or separated parents has increased across many OECD countries and 17% of children lived with a single parent in 2017 (OECD, 2018[59]). Changing families can have implications for children's mental health, emotional well-being and educational achievement. For children with divorced parents, adjustments to changes in financial

resources, in parental relationships and involvement, and in levels of family stress and conflict are all negatively associated with emotional well-being and academic achievement (see Box 3.3 for an example of the interactions between a natural disaster, changing families and emotional well-being outcomes). While it would be expected that these associations may be weakened as non-traditional family structures become more common and social stigma decreases, research shows that they have instead remained stable over time (Härkönen, Bernardi and Boertien, 2017[60]).

Box 3.3. Mana Ake: Scaling up interventions for a natural disaster to a generalised well-being approach

Severe weather events and natural disasters can significantly increase levels of distress, which strain social relationships, adversely affect mental health and even lead to increased levels of violence.

To deal with the significant mental health issues in the communities affected by the 2010 Canterbury Earthquake and the 2011 aftershock, New Zealand adopted Mana Ake, a programme for children ages 5-12 years old in earthquake-affected communities. It consists of Kaimahi teams, "which have a diverse range of skills and include psychologists, social workers, counsellors, teachers and youth workers." The approach aims for collaboration between support services and clusters of schools and education personnel (including early childhood educators) to target resources most effectively.

The Kaimahi specialists work with teachers and families when children are dealing with ongoing issues that affect their well-being (anxiety, social isolation, parental separation, grief and loss and managing emotions). The specialists are employed by 13 different NGOs. The teams can work with individual students at school, in the community or at home, and with groups of students at school.

In 2018, New Zealand announced its intention to broaden the programme to make Mana Ake available for all primary to lower secondary schoolchildren across Greater Christchurch, the Hurunui and Kaikōura (New Zealand Ministry of Health – Manatū Hauora, 2018[61]), as part of the lead-up to its first Wellbeing budget in 2019 (Government of New Zealand, 2019[62]). Evaluations of the initial waves of Mana Ake suggest the programmes can have significant social outcomes and value for money, as well as a sustainable, intangible and collective impact (Savage et al., 2018[63]).

Changing sleep patterns

Some lifestyle factors of modern childhood, including stress, less time to play and more hours to do school work, mean that children today across OECD countries face higher odds of sleep deprivation (Choi, 2018[9]). Most studies cite evidence of a long-term decline in sleep duration among children and adolescents, although it is not extreme (Matricciani et al., 2017[64]). Having enough sleep is crucial for children's physical and emotional well-being. Lack of sleep negatively affects children's mental health and emotional regulation, and is associated with relationship stress and suicidal thinking (Sarchiapone et al., 2014[65]; Chaput et al., 2016[66]). Adolescents with sleep disorders also tend to have lower average health-related quality of life and more subjective health complaints (Paiva, Gaspar and Matos, 2015[67]).

Increasing urbanisation

Nearly half of the world's population lives in cities (OECD, 2016[68]). This share of the population has been growing, with rural areas seeing increasing population loss (OECD, 2019[54]). While there are potential benefits of urbanisation, it is correlated with a lower sense of social connection and belonging in local communities and neighbourhoods (OECD, 2016[68]), which can worsen social alienation and exclusion. Urban upbringing is also associated with increased risks of mental health problems, as well as substance use and physical inactivity (Patton et al., 2016[69]). Increasing urbanisation also means that more and more children are growing up in built-up environments with less green space. There is some evidence of a positive association between children and adolescents' mental well-being and exposure to green spaces, a relationship already well documented for adults, though additional research is necessary (Vanaken and Danckaerts, 2018[70]).

Strengthening protective factors

A number of factors can protect children from negative emotional well-being outcomes, even when faced with adverse circumstances. Incorporation of protective factors into the lives of children is important to build resilience (i.e. "the capacity to successfully develop even when faced by chronic adversity and stress" (Barnes, 2016[71])). Personal protective factors such as social and emotional skills (e.g. motivation, self-regulation, autonomy and cooperativeness, self-efficacy and self-worth) are important in strengthening children's emotional well-being (OECD, 2015[3]). Social and emotional skills can be fostered by forming close and secure relationships with parents during early childhood (see Chapter 4), and programmes to develop them in school are often incorporated into national curricula. Relationships not only help bolster children's social and emotional skills; stable emotional support can act as a protective or compensatory factor when dealing with challenges to emotional well-being such as chronic stress, exposure to bullying and depression (OECD, 2015[3]; OECD, 2017[32]; Goldman et al., 2016[72]).

Box 3.4. Common characteristics of effective prevention and intervention programmes

Effective prevention and intervention programmes in schools can help reduce and prevent anxiety and depression as well as increase the awareness of different mental health issues among youth (Choi, 2018[9]). One of the most common components found among prevention programmes for adolescent depression, anxiety and suicide is cognitive-behavioural therapy (CBT). These types of programmes focus on cognitive and behavioural risk factors among children and teach children and adolescents cognitive restructuring skills that help them detect and overcome negative thoughts and emotions as well as improve their problem solving skills (Das et al., 2016[73]; Choi, 2018[9]).

In a recent review of existing studies on prevention programmes for mental health, substance use, violence, sexual health and life skills, problem solving was the most commonly shared practice element (76% of the programmes), followed by communication skills (45%), assertiveness (45%) and insight building (38%). Along with a growing body of evidence, these commonalities among prevention programmes all indicate the importance of social and emotional skills as a powerful tool to counteract and overcome the adverse effects of mental health problems (Choi, 2018[9]).

As mentors, educators and role models, teachers also have an important role in strengthening emotional well-being in students (OECD, 2015[3]). Students who have good relationships with their teachers tend to be happier and those who report high levels of support from their teachers tend to handle stress better at school (Malecki and Demaray, 2006[74]; Goldman et al., 2016[72]). Positive teacher-student relationships are also associated with better emotion regulation and positive peer relationships (Goldman et al., 2016[72]), as well as reduction in behaviours such as suicidal thoughts, substance use and violence (Bergin and Bergin, 2009[75]). Inversely, negative teacher-student relationships can make students more vulnerable to challenges. For example, students' perceptions of unfair treatment by their teacher and of the school disciplinary climate have been identified as some of the strongest predictors of bullying victimisation (OECD, 2017[32]).

Open communication and exchange of information between parents, teachers and students when implementing intervention programmes is crucial for children who are being bullied at school or experiencing mental health issues. This is especially pertinent as many parents are not aware of the difficulties their children face and cite lack of information on how to be involved in schools or on how their involvement would help their child's development as communication obstacles (Choi, 2018[9]). Raising awareness among youth for mental health issues like depression, anxiety and eating disorders is crucial early on so that they do not become severe and chronic (Gladstone, Beardslee and O'Connor, 2011[76]), especially since a majority of youth with these problems do not get or seek out treatment (Choi, 2018[9]). Youth with the highest need are often those who do not seek support and who have the least access to help or treatment, which compounds the difficulty (McLoughlin, Gould and Malone, 2015[45]).

Many countries have developed strategic policy frameworks that address emotional well-being challenges in holistic well-being frameworks. These tend to address multiple challenges through a comprehensive approach, often focusing on both preventing and limiting the effects of different issues. Research generally confirms that 'whole-school', 'comprehensive', or 'school and system-wide interventions', that look at both prevention and response are effective (Richard, Schneider and Mallet, 2012[77]; UNESCO, 2017[78]).

Considerations for future research

Despite the presence of large-scale international surveys with indicators on emotional well-being, most independent studies and data sets are quite limited because they tend to have small samples, are conducted in developed countries and are mostly cross-sectional in design (Choi, 2018[9]). Future research should focus on strengthening this base. Current gaps and areas in need of further research include:

- There is a rarity of representative data samples from childhood into adolescence and from adolescence into adulthood necessary for understanding the change and persistence of psychiatric disorders and other emotional well-being factors.
- There is a need for up-to-date data on cyberbullying and other challenges among younger children to understand the long-term relationships and trends. Most cross-national data are from large-scale assessments that survey adolescents.
- Different psychiatric disorders and emotional problems tend to have overlapping causes, symptoms and consequences. Thus, future studies should consider examining multiple outcomes and indicators (i.e. examine the combined effects of stress, anxiety and depression and not each independently), to maximise the understanding how to improve awareness and reduce negative consequences.

- Further research is necessary to investigate how protective factors, particularly the roles of parents and teachers, can be strengthened in the context of larger well-being framework policy approaches increasingly being adopted.
- Teachers play a vital role in delivering prevention and intervention programmes (Durlak et al., 2011[79]; Neil and Christensen, 2009[80]). Future research should assess the effectiveness of training programmes to help teachers identify early signs and symptoms of mental health and emotional problems (Choi, 2018[9]), and the practicality of implementation (i.e. cost, additional burden on teachers and necessary support needed to carry out training and programmes).
- Research on how to involve parents in prevention, detection and intervention programmes effectively is required, particularly in cases of high-risk students. Ways to promote communication and collaboration between teachers and parents online and through emerging virtual well-being hubs should also be investigated.

High priority challenges in OECD countries and systems

Policy makers have taken more interest in the well-being of individuals, particularly children and adolescents, over the past few decades (Choi, 2018[9]). In the 21st Century Children Policy Questionnaire, countries identified a range of issues that they face in their national or regional context that adversely affect children's emotional well-being, as well as the most pressing challenges in terms of policy priorities. These are presented in Table 3.2.

Bullying was the most common policy concern, flagged by 23 of the 24 countries that responded to this part of the Policy Questionnaire. School-related anxiety and stress and mental illness were also widespread challenges. Bullying was perceived as the most intense, seen as both very prevalent and very pressing. Mental illness and school-based anxiety and stress were also perceived as both highly pressing and prevalent.

While countries often cited trends in international survey data when identifying the most pressing challenges, this was not always the case. Indeed, country-specific issues also influenced perceptions of the challenges and of their intensity. Several countries cited highly mediatised cases around certain challenges like cyberbullying, mental health and suicide, in spite of their suicide rates dropping, for example. Others, like Greece, highlighted the influence of macro-level factors such as the repercussions of the 2008 economic crisis (such as parents not having as much time to spend with their children due to having to work several jobs) on life satisfaction.

Further analysis also indicated that countries selected the same issues but for different reasons due to local or context-specific issues. This was the case for fear and anxiety of threats, for example, with the United States attributing the challenge to the prevalence of gun violence, whereas Turkey cited geopolitical tensions. This shows that while international indicators can help identify trends, contextual and qualitative analysis is also crucial to develop a more nuanced understanding of the underlying causes.

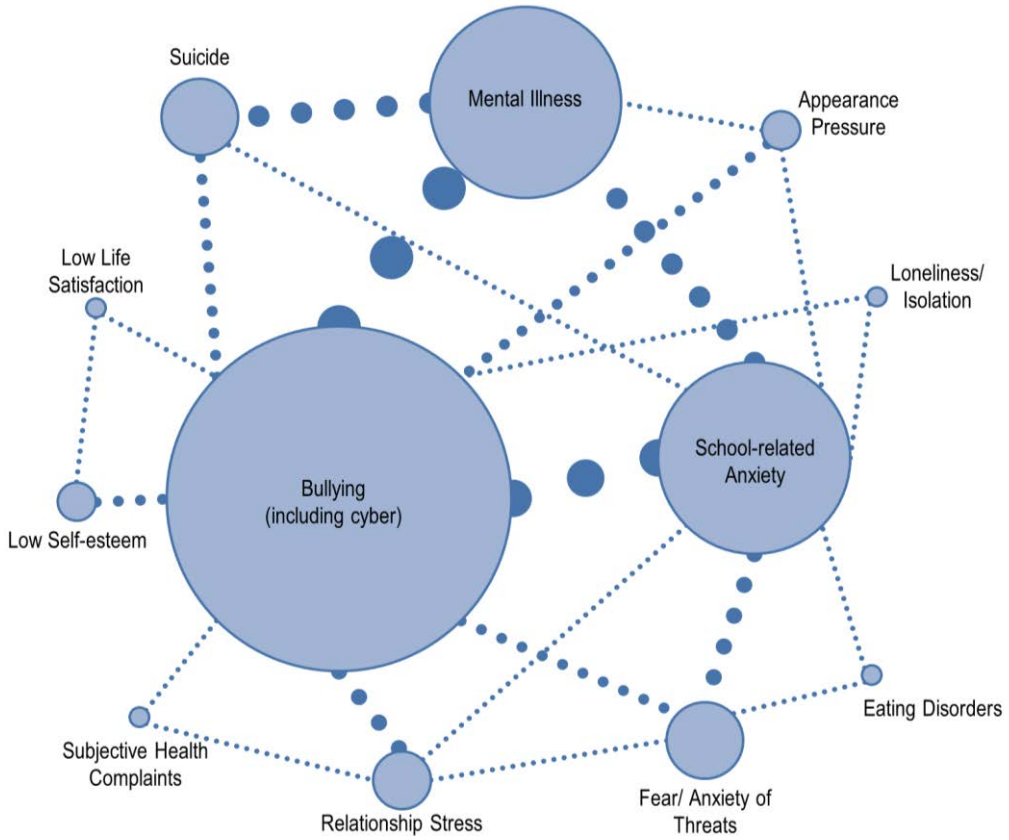
Table 3.2. Overview of priorities and pressing challenges in emotional well-being across countries and systems

	Total Challenges	Total Most Pressing Challenges	AUS	BEL-FL	BEL-FR	CAN	CHE	CZE	ESP	FRA	GBR(SC)	GRC	IRL	JPN	KOR	LVA	LUX	MEX	NLD	NZL	NOR	PRT	RUS	SWE	TUR	USA
Bullying (incl. cyber)	23	18	●	●	●			●	●	●	●	●	●			●	●		●	●	●	●	●		●	●
School-related anxiety	22	10				●			●		●				●		●	●	●		●				●	●
Mental illness	19	10	●	●		●	●				●		●						●	●	●		●			
Relationship stress	14	3														●						●			●	
Suicide	14	4		●		●	●																●			
Appearance pressure	13	2							●				●													
Low self-esteem	13	2								●		●														
Eating disorders	12	1																●								
SHC	11	1														●										
Self-harm	11	0																								
Loneliness/isolation	10	1															●									
Low life satisfaction	8	1										●														
Fear/anxiety of threats	6	3																●							●	●

Note: 24 of 26 systems responded to this question. Number of challenges (depicted in light blue) was unlimited; most pressing (depicted with a white dot) was limited to three options.
* SHC = Subjective health complaints (e.g. headaches, stomach-aches, feeling low, irritability, dizziness)
Source: 21st Century Children Policy Questionnaire

The challenges to children and adolescents' emotional well-being are often not independent. Many countries noted intersections and relationships between the pressing challenges in their responses, which they often selected together. Figure 3.2 provides a visual depiction of the relative importance and linkages indicated between the challenges.

Figure 3.2. Links between most pressing challenges



Source: 21st Century Children Policy Questionnaire
Note: Countries and systems were limited to three issues they could flag as "most pressing". The width of the connectors reflects the number of times the respective challenges were selected together. The size of the circles reflects the number of times each challenge was selected as pressing.

Suicide was often selected with mental health and with bullying, for example. School-based stress was also often selected with mental health, and relationship stress with bullying. Relationships between these challenges on an individual level are confirmed by the literature (Choi, 2018[9]). While countries were asked to select the challenges independently, patterns in the responses suggest the challenges often selected together may also be interrelated on a larger, system-wide scale.

In sum

While there has been a significant increase in children reporting some mental health problems in the 21st century, the prevalence of other emotional well-being challenges has been decreasing. This highlights both the success of some existing efforts to improve children's emotional well-being as well as some of the challenges that should be prioritised,

especially improving the emotional well-being outcomes of girls and children from disadvantaged and migrant backgrounds.

Developing effective policy initiatives is crucial given the interdependent relationship between mental and physical health and overall well-being, as well as because emotional well-being in childhood is also a predictor of emotional well-being later in life. New data, policies and programmes are necessary to more effectively monitor and strengthen children's emotional well-being and protective factors in the short and long run.

Note

[1] The WHO's Health Behaviour in School-Aged Children (HBSC) study is a collaborative cross-sectional study across 43 countries. HBSC collects data every 4 years among 11, 13, and 15-year-olds through self-reported questionnaires on key health indicators and outcomes, behaviours and background variables. The most recent study from 2013-14 surveyed 220 000 children and adolescents.

References

Barnes, A. (2016), "Childhood stress and resilience", in *Health Promotion for Children and Adolescents*, Springer US, Boston, MA, http://dx.doi.org/10.1007/978-1-4899-7711-3_5. [71]

Bergin, C. and D. Bergin (2009), "Attachment in the classroom", *Educational Psychology Review*, Vol. 21/2, pp. 141-170, http://dx.doi.org/10.1007/s10648-009-9104-0. [75]

Blomqvist, I. et al. (2019), "Increase of internalized mental health symptoms among adolescents during the last three decades", *European Journal of Public Health*, http://dx.doi.org/10.1093/eurpub/ckz028. [19]

Bor, W. et al. (2014), "Are child and adolescent mental health problems increasing in the 21st century? A systematic review", *Australian & New Zealand Journal of Psychiatry*, Vol. 48/7, pp. 606-616, http://dx.doi.org/10.1177/0004867414533834. [18]

Brailovskaia, J., T. Teismann and J. Margraf (2018), "Cyberbullying, positive mental health and suicide ideation/behavior", *Psychiatry Research*, Vol. 267, pp. 240-242, http://dx.doi.org/10.1016/J.PSYCHRES.2018.05.074. [49]

Cavallo, F. et al. (2015), "Trends in life satisfaction in European and North-American adolescents from 2002 to 2010 in over 30 countries", *The European Journal of Public Health*, Vol. 25/suppl 2, pp. 80-82, http://dx.doi.org/10.1093/eurpub/ckv014. [35]

Chaput, J. et al. (2016), "Systematic review of the relationships between sleep duration and health indicators in school-aged children and youth", *Applied Physiology, Nutrition, and Metabolism*, Vol. 41/6 (Suppl. 3), pp. S266-S282, http://dx.doi.org/10.1139/apnm-2015-0627. [66]

Choi, A. (2018), "Emotional well-being of children and adolescents: Recent trends and relevant factors", *OECD Education Working Papers*, No. 169, OECD Publishing, Paris, https://dx.doi.org/10.1787/41576fb2-en. [9]

Collishaw, S. (2015), "Annual Research Review: Secular trends in child and adolescent mental health", *Journal of Child Psychology and Psychiatry*, Vol. 56/3, pp. 370-393, http://dx.doi.org/10.1111/jcpp.12372. [20]

Costello, E., W. Copeland and A. Angold (2011), "Trends in psychopathology across the adolescent years: What changes when children become adolescents, and when adolescents become adults?", *Journal of Child Psychology and Psychiatry*, Vol. 52/10, pp. 1015-1025, http://dx.doi.org/10.1111/j.1469-7610.2011.02446.x. [15]

Das, J. et al. (2016), "Interventions for adolescent mental health: An overview of systematic reviews", *Journal of Adolescent Health*, Vol. 59/4, pp. S49-S60, http://dx.doi.org/10.1016/J.JADOHEALTH.2016.06.020. [73]

Dodge, R. et al. (2012), "The challenge of defining wellbeing", *International Journal of Wellbeing*, Vol. 2/3, http://internationaljournalofwellbeing.org/ijow/index.php/ijow/article/view/89. [10]

Drydakis, N. (2014), "Bullying at school and labour market outcomes", *International Journal of Manpower*, Vol. 35/8, pp. 1185-1211, http://dx.doi.org/10.1108/ijm-08-2012-0122. [42]

Durlak, J. et al. (2011), "The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions", *Child Development*, Vol. 82/1, pp. 405-432, http://dx.doi.org/10.1111/j.1467-8624.2010.01564.x. [79]

Elgar, F. et al. (2017), "Early-life income inequality and adolescent health and well-being", *Social Science & Medicine*, Vol. 174, pp. 197-208, http://dx.doi.org/10.1016/J.SOCSCIMED.2016.10.014. [57]

Fuhrmann, D., L. Knoll and S. Blakemore (2015), "Adolescence as a sensitive period of brain development", *Trends in Cognitive Sciences*, Vol. 19/10, pp. 558-566, http://dx.doi.org/10.1016/J.TICS.2015.07.008. [5]

Gandhi, S. et al. (2016), "Mental health service use among children and youth in Ontario: Population-based trends over time", *The Canadian Journal of Psychiatry*, Vol. 61/2, pp. 119-124, http://dx.doi.org/10.1177/0706743715621254. [24]

Gladstone, T., W. Beardslee and E. O'Connor (2011), "The prevention of adolescent depression", *Psychiatric Clinics of North America*, Vol. 34/1, pp. 35-52, http://dx.doi.org/10.1016/J.PSC.2010.11.015. [76]

Goldbeck, L. et al. (2007), *Life Satisfaction Decreases during Adolescence*, Springer, http://dx.doi.org/10.2307/27641333. [34]

Goldman, E. et al. (2016), "Child mental health: Recent developments with respect to risk, resilience, and interventions", in *Health Promotion for Children and Adolescents*, Springer US, Boston, MA, http://dx.doi.org/10.1007/978-1-4899-7711-3_6. [72]

Government of New Zealand (2019), *Budget 2019: Focus on wellbeing*, www.budget.govt.nz/budget/2019/wellbeing/mental-health/supporting-young-people.htm. [62]

Härkönen, J., F. Bernardi and D. Boertien (2017), "Family dynamics and child outcomes: An overview of research and open questions", *European Journal of Population*, Vol. 33/2, pp. 163-184, http://dx.doi.org/10.1007/s10680-017-9424-6. [60]

HBSC Data Management Centre (2016), *Open Access - HBSC Data Portal - 2001/2002 to 2013/2014*, University of Bergen, www.uib.no/en/hbscdata/113290/open-access. [14]

Henderson, J. et al. (2017), "Integrated collaborative care teams to enhance service delivery to youth with mental health and substance use challenges: protocol for a pragmatic randomised controlled trial", *BMJ Open*, Vol. 7/2, http://dx.doi.org/10.1136/bmjopen-2016-014080. [17]

Huitsing, G. and R. Veenstra (2012), "Bullying in classrooms: Participant roles from a social network perspective", *Aggressive Behavior*, Vol. 38/6, pp. 494-509, http://dx.doi.org/10.1002/ab.21438. [40]

Jones, P. (2013), "Adult mental health disorders and their age at onset", *British Journal of Psychiatry*, Vol. 202/s54, pp. s5-s10, http://dx.doi.org/10.1192/bjp.bp.112.119164. [7]

Kahneman, D. and A. Deaton (2010), "High income improves evaluation of life but not emotional well-being.", *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 107/38, pp. 16489-93, http://dx.doi.org/10.1073/pnas.1011492107. [55]

Keski-Rahkonen, A. and L. Mustelin (2016), "Epidemiology of eating disorders in Europe", *Current Opinion in Psychiatry*, Vol. 29/6, pp. 340-345, http://dx.doi.org/10.1097/YCO.0000000000000278. [30]

Kieling, C. et al. (2011), "Child and adolescent mental health worldwide: Evidence for action", *The Lancet*, Vol. 378/9801, pp. 1515-1525, http://dx.doi.org/10.1016/s0140-6736(11)60827-1. [6]

Kochel, K., G. Ladd and K. Rudolph (2012), "Longitudinal associations among youth depressive symptoms, peer victimization, and low peer acceptance", *Child Development*, Vol. 83/2, pp. 637-650, http://dx.doi.org/10.1111/j.1467-8624.2011.01722.x. [38]

Korkeila, J. et al. (2003), "Review Article: Establishing a set of mental health indicators for Europe", *Scandinavian Journal of Public Health*, Vol. 31/6, pp. 451-459, http://dx.doi.org/10.1080/14034940210165208. [13]

Litmanen, J. et al. (2017), "Are eating disorders and their symptoms increasing in prevalence among adolescent population?", *Nordic Journal of Psychiatry*, Vol. 71/1, pp. 61-66, http://dx.doi.org/10.1080/08039488.2016.1224272. [28]

Loth, K. et al. (2015), "Disordered eating and psychological well-being in overweight and nonoverweight adolescents: Secular trends from 1999 to 2010", *International Journal of Eating Disorders*, Vol. 48/3, pp. 323-327, http://dx.doi.org/10.1002/eat.22382. [29]

Lucassen, M. et al. (2014), *Youth' 12: The Health and Wellbeing of Secondary School Students in New Zealand. Results for Young People Attracted to the Same Sex or Both Sexes*, http://oro.open.ac.uk/43995/1/Same%20Sex%20Report_14NM.pdf. [43]

Malecki, C. and M. Demaray (2006), "Social support as a buffer in the relationship between socioeconomic status and academic performance", *School Psychology Quarterly*, Vol. 21/4, pp. 375-395, https://doi.org/10.1037/h0084129. [74]

Matricciani, L. et al. (2017), "Past, present, and future: Trends in sleep duration and implications for public health", *Sleep Health*, Vol. 3/5, pp. 317-323, http://dx.doi.org/10.1016/J.SLEH.2017.07.006. [64]

Maughan, B., S. Collishaw and A. Stringaris (2013), "Depression in childhood and adolescence", *Journal of the Canadian Academy of Child and Adolescent Psychiatry / Journal de l'Academie canadienne de psychiatrie de l'enfant et de l'adolescent*, Vol. 22/1, pp. 35-40, www.ncbi.nlm.nih.gov/pubmed/23390431. [21]

McLoughlin, A., M. Gould and K. Malone (2015), "Global trends in teenage suicide: 2003–2014", *QJM*, Vol. 108/10, pp. 765-780, http://dx.doi.org/10.1093/qjmed/hcv026. [45]

Modecki, K. et al. (2014), "Bullying prevalence across contexts: A meta-analysis measuring cyber and traditional bullying", *Journal of Adolescent Health*, Vol. 55/5, pp. 602-611, http://dx.doi.org/10.1016/J.JADOHEALTH.2014.06.007. [47]

Mojtabai, R., M. Olfson and B. Han (2016), "National trends in the prevalence and treatment of depression in adolescents and young adults", *Pediatrics*, Vol. 138/6, http://dx.doi.org/10.1542/peds.2016-1878. [25]

Moksnes, U. et al. (2016), "The association between school stress, life satisfaction and depressive symptoms in adolescents: Life satisfaction as a potential mediator", *Social Indicators Research*, Vol. 125/1, pp. 339-357, http://dx.doi.org/10.1007/s11205-014-0842-0. [33]

Molcho, M. et al. (2009), "Cross-national time trends in bullying behaviour 1994–2006: Findings from Europe and North America", *International Journal of Public Health*, Vol. 54/S2, pp. 225-234, http://dx.doi.org/10.1007/s00038-009-5414-8. [41]

Morgan, A. et al. (2007), *Mental Well-being in School-aged Children in Europe: Associations with Social Cohesion and Socioeconomic Circumstances*, www.euro.who.int/__data/assets/pdf_file/0006/74751/Hbsc_Forum_2007_mental_well-being.pdf. [2]

Mueller, A. et al. (2015), "Suicide ideation and bullying among US adolescents: Examining the intersections of sexual orientation, gender, and race/ethnicity.", *American journal of public health*, Vol. 105/5, pp. 980-5, http://dx.doi.org/10.2105/AJPH.2014.302391. [46]

Murphy, R. (2016), *Child and Adolescent Mental Health - Trends and Key Issues*, SPICe: The Information Centre, www.parliament.scot/ResearchBriefingsAndFactsheets/S5/SB_16-76_Child_and_Adolescent_Mental_Health_Trends_and_Key_Issues.pdf. [23]

Neil, A. and H. Christensen (2009), "Efficacy and effectiveness of school-based prevention and early intervention programs for anxiety", *Clinical Psychology Review*, Vol. 29/3, pp. 208-215, http://dx.doi.org/10.1016/j.cpr.2009.01.002. [80]

New Zealand Ministry of Health – Manatū Hauora (2018), *Mental health workers begin in Canterbury schools*, New Zealand Ministry of Health, www.health.govt.nz/news-media/news-items/mental-health-workers-begin-canterbury-schools. [61]

Ng, W. and E. Diener (2019), "Affluence and subjective well-being: Does income inequality moderate their associations?", *Applied Research in Quality of Life*, Vol. 14/1, pp. 155-170, http://dx.doi.org/10.1007/s11482-017-9585-9. [56]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [54]

OECD (2018), *Children in Families*, OECD Family Database, www.oecd.org/els/family/database.htm. [59]

OECD (2018), *How is Depression Related to Education?*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2017-en. [26]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [32]

OECD (2017), *Teenage Suicides (15-19 years old)*, OECD Family Database, www.who.int/classifications/icd/en/. [50]

OECD (2016), *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-en. [68]

OECD (2015), *Skills for Social Progress: The Power of Social and Emotional Skills*, OECD Skills Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264226159-en. [3]

Olfson, M. et al. (2014), "National trends in the mental health care of children, adolescents, and adults by office-based physicians", *JAMA Psychiatry*, Vol. 71/1, p. 81, http://dx.doi.org/10.1001/jamapsychiatry.2013.3074. [16]

Ottova-Jordan, V. et al. (2015), "Trends in multiple recurrent health complaints in 15-year-olds in 35 countries in Europe, North America and Israel from 1994 to 2010", *The European Journal of Public Health*, Vol. 25/suppl 2, pp. 24-27, http://dx.doi.org/10.1093/eurpub/ckv015. [53]

Paiva, T., T. Gaspar and M. Matos (2015), "Sleep deprivation in adolescents: Correlations with health complaints and health-related quality of life", *Sleep Medicine*, Vol. 16/4, pp. 521-527, http://dx.doi.org/10.1016/j.sleep.2014.10.010. [67]

Patton, G. et al. (2016), "Our future: A Lancet commission on adolescent health and wellbeing", *Lancet (London, England)*, Vol. 387/10036, pp. 2423-78, http://dx.doi.org/10.1016/S0140-6736(16)00579-1. [69]

Paus, T., M. Keshavan and J. Giedd (2008), "Why do many psychiatric disorders emerge during adolescence?", *Nature Reviews Neuroscience*, Vol. 9/12, pp. 947-957, http://dx.doi.org/10.1038/nrn2513. [4]

Pollard, E. and P. Lee (2003), "Child well-being: A systematic review of the literature", *Social Indicators Research*, Vol. 61/1, pp. 59-78, http://dx.doi.org/10.1023/a:1021284215801. [1]

Potrebny, T., N. Wiium and M. Lundegård (2017), "Temporal trends in adolescents' self-reported psychosomatic health complaints from 1980-2016: A systematic review and meta-analysis", *PLOS ONE*, Vol. 12/11, p. e0188374, http://dx.doi.org/10.1371/journal.pone.0188374. [36]

Pottie, K. et al. (2015), "Do first generation immigrant adolescents face higher rates of bullying, violence and suicidal behaviours than do third generation and native born?", *Journal of Immigrant and Minority Health*, Vol. 17/5, pp. 1557-1566, http://dx.doi.org/10.1007/s10903-014-0108-6. [58]

Richard, J., B. Schneider and P. Mallet (2012), "Revisiting the whole-school approach to bullying: Really looking at the whole school", *School Psychology International*, Vol. 33/3, pp. 263-284, http://dx.doi.org/10.1177/0143034311415906. [77]

Ruch, D. et al. (2019), "Trends in suicide among youth aged 10 to 19 years in the United States, 1975 to 2016", *JAMA Network Open*, Vol. 2/5, p. e193886, http://dx.doi.org/10.1001/jamanetworkopen.2019.3886. [51]

Sarchiapone, M. et al. (2014), "Hours of sleep in adolescents and its association with anxiety, emotional concerns, and suicidal ideation", *Sleep Medicine*, Vol. 15/2, pp. 248-254, http://dx.doi.org/10.1016/j.sleep.2013.11.780. [65]

Savage, C. et al. (2018), *The Evaluation of Wave 6: Whānau Initiatives for Te Pūtahitanga o Te Waipounamu The Evaluation of Wave Six Whānau Initiatives for Te Pūtahitanga o Te Waipounamu*, Ihi Research, https://static1.squarespace.com/static/548669c2e4b0e9c86a08b3ca/t/5b20404f1ae6cf43f6d29056/1528840319694/Wave+6+Evaluation.pdf. [63]

Swearer, S. and S. Hymel (2015), "Understanding the psychology of bullying: Moving toward a social-ecological diathesis–stress model", *American Psychologist*, Vol. 70/4, pp. 344-353, http://dx.doi.org/10.1037/a0038929. [39]

Sznitman, S., L. Reisel and D. Romer (2011), "The neglected role of adolescent emotional well-being in national educational achievement: Bridging the gap between education and mental health policies", *Journal of Adolescent Health*, Vol. 48/2, pp. 135-142, http://dx.doi.org/10.1016/j.jadohealth.2010.06.013. [27]

Thornicroft, G. et al. (2016), "Evidence for effective interventions to reduce mental-health-related stigma and discrimination", *The Lancet*, Vol. 387/10023, pp. 1123-1132, http://dx.doi.org/10.1016/S0140-6736(15)00298-6. [22]

Tokunaga, R. (2010), "Following you home from school: A critical review and synthesis of research on cyberbullying victimization", *Computers in Human Behavior*, Vol. 26/3, pp. 277-287, http://dx.doi.org/10.1016/J.CHB.2009.11.014. [48]

UNESCO (2019), *Behind the numbers: Ending school violence and bullying*, https://unesdoc.unesco.org/ark:/48223/pf0000366483. [37]

UNESCO (2017), *School Violence and Bullying: Global Status Report*, https://unesdoc.unesco.org/ark:/48223/pf0000246970. [78]

UNESCO (2016), *Out in the Open: Education Sector Responses to Violence Based on Sexual Orientation or Gender Identity/Expression: Summary Report*, https://unesdoc.unesco.org/ark:/48223/pf0000244652. [44]

Vanaken, G. and M. Danckaerts (2018), "Impact of green space exposure on children's and adolescents' mental health: A systematic review", *International Journal of Environmental Research and Public Health*, Vol. 15/12, p. 2668, http://dx.doi.org/10.3390/ijerph15122668. [70]

Westerhof, G. and C. Keyes (2010), "Mental illness and mental health: The Two Continua Model across the lifespan", *Journal of Adult Development*, Vol. 17/2, pp. 110-119, http://dx.doi.org/10.1007/s10804-009-9082-y. [11]

WHO (2018), *Mental Health: Strengthening our Response*, www.who.int/en/news-room/fact-sheets/detail/mental-health-strengthening-our-response. [12]

WHO (2017), *Child and Adolescent Mental Health*, www.who.int/mental_health/maternal-child/child_adolescent/en/. [8]

WHO (2016), *Growing up Unequal: Gender and Socioeconomic Differences in Young People's Health and Well-being*, www.euro.who.int/en/publications/abstracts/growing-up-unequal.-hbsc-2016-study-20132014-survey. [31]

Yoshikawa, H., J. Aber and W. Beardslee (2012), "The effects of poverty on the mental, emotional, and behavioral health of children and youth: Implications for prevention.", *American Psychologist*, Vol. 67/4, pp. 272-284, http://dx.doi.org/10.1037/a0028015. [52]

Part II. Children's relationships in the 21st century

Chapter 4. Parenting and friendships in the 21st century

Socialisation and relationships form an important part of our lives, from our earliest days through to old age. For children and youth, strong and positive relationships with families and peers are essential for well-being and healthy development. This chapter reviews the literature on the importance of positive and supportive relationships for children, taking a life course perspective on the relative roles of parents and peers at each stage of development. It then asks the question: have relationships with parents and peers changed in a digital world? What might this mean for 21st century children? The chapter provides an overview of parenting styles and what we know (and don't know) about their impact. It takes a special look at helicopter parenting across the OECD. It concludes with a look at friendships, both traditional and virtual.

Background

Relationships have a significant impact on one's life. Families play a fundamental role in children's cognitive, developmental, educational and health outcomes, particularly at the youngest ages. In addition to families, friends are also key – peers play an important part in social and emotional development, especially from middle childhood through adolescence.

Yet families are changing. The last two decades have seen declining fertility rates, decreasing rates of marriage and increasing rates of divorce, and rising numbers of single parent households. Governments across the OECD are in the process of legalising same-sex marriages. Parents also tend to be older, and have fewer children, which has largely coincided with increasing female labour market participation and educational attainment in recent decades (Bongaarts, Mensch and Blanc, 2017[1]).

Outside the family setting, how individuals form relationships with their friends and peers has also changed. Increasing diversity means that children and adolescents in OECD countries are more likely to have peers from different cultural backgrounds, ethnicities and sexual orientations. And the omnipresence of technology has changed social interaction significantly. While texting, instant messaging and social networking sites are primarily used to reinforce existing relationships among friends, families and partners, online friendships and virtual peers are increasingly important.

This chapter will provide a brief overview of the importance of families and peers from a life course perspective, highlighting the impact on emotional well-being. It will then look specifically at parenting and friendship, examining what each one looks like in a digital age, and what these changes might mean for 21st century children.

Families and peers from a life course perspective

Numerous studies in sociology, economics and child development literature have documented the importance of families for children's cognitive, developmental, educational, labour and health outcomes (OECD, 2011[2]).

In addition to families, peers can affect children in terms of their cognitive, social, emotional, behavioural and developmental outcomes through reciprocity, social support, socialisation and opportunity (Hay, 2005[3]; Haynie and Osgood, 2005[4]; Hinde et al., 1985[5]; Ost, 2010[6]; Reitz et al., 2014[7]). They can also have negative impacts in terms of delinquency and aggression.

While relationships are important throughout life, the relative importance of the key players evolves as children develop. The following sections provide a brief overview looking at early childhood, middle childhood and adolescence.

Early childhood

In the earliest years, family relationships are central. Strong parent-child attachment and parenting characterised by nurturing care and support are often cited as protective factors for positive physical, social and emotional development (Chan, Lake and Hansen, 2017[8]; OECD, 2015[9]). Consistent and responsive parenting during early childhood is a strong predictor of cognitive and social growth and linked to healthy interpersonal relationships across the lifespan (Schneider, Atkinson and Tardif, 2001[10]).

Family disruptions, distress and conflicts can influence child outcomes, both in the short and long run. Ineffective parenting, parental depression or psychological issues, stress and parental relationship issues are some of the mechanisms through which family structures and relationships can have a lasting negative impact on child development and well-being later in life (Carlson and Corcoran, 2001[11]).

In addition to families, children start forming relationships with their peers from the first years of their lives. Social skills that can enhance peer relations, such as joint attention, emotion regulation, control and imitation begin to consolidate during the preschool years.

Middle childhood

Family support during middle childhood is still key. Secure attachments support positive emotional development and pro-social behaviours, which are also correlated with good peer relations (Hartup, 1992[12]). Many of the risk and protective factors for early childhood have similar effects during middle childhood. Children who undergo family stress during this period tend to show more behaviour problems and marginal decreases in academic achievement (Duncan et al., 2012[13]). Children and youth who are exposed to harsh and nonresponsive parenting during early childhood on top of recent traumatic events also tend to have higher levels of internalising and externalising problems (Jaffee et al., 2015[14]).

These adverse effects often extend to peer relations. A longitudinal study of children from ages 6 to 13 found that early behavioural problems such as disruptiveness and withdrawal are linked to peer rejection and low "friendedness" in middle childhood (Pedersen et al., 2007[15]). Peer rejection and feeling disliked by your peers have been shown to be a strong predictor of having difficulties in school, such as truancy, dropout and disciplinary problems (Hartup, 1992[12]).

Adolescence

Adolescence is an important transitional period. Adolescents gain more independence and autonomy and spend more time with their peers. This is generally good news: 15-year-olds who reported spending time with their peers were more likely to report higher life satisfaction and a host of other positive outcomes (OECD, 2017[16]).

However, adolescents can also experience increased pressure to fit in at a time when brain development is still ongoing. Evidence from neurodevelopmental studies suggests that an imbalance between affective and cognitive control brain regions can contribute towards an increase in risk taking behaviours during adolescence (Telzer et al., 2015[17]).

Despite the importance of peers at this stage, family still plays a key role. Difficult family relationships and low family satisfaction are significantly linked with adolescent depression and low self-esteem (Stavropoulos et al., 2015[18]). These effects can be long lasting: poor parental contact and poor peer relationships (i.e. not being happy with classmates, spending time alone) were significant predictors of adult mental and functional health (Landstedt, Hammarström and Winefield, 2015[19]).

Parenting in the 21st century

Parents often feel enormous pressure to help their children succeed, whether it be in making friends, at school, or beyond. However, parents who turn to the Internet for help will find a bewildering amount of information: the simple English keyword “parenting” yields 385 000 000 results in less than 0.5 seconds.[1] Every kind of parenting style imaginable is promoted, from positive parenting to holistic parenting, free-range parenting, tiger

parenting and more. This plethora of parenting styles raises the question: has parenting really changed in the modern age? And if so, what does this mean for parents, their children, and ultimately, education?

Traditional parenting styles

The standard parenting typology has two dimensions: demandingness and responsiveness. Demandingness refers to high expectations for child behaviour and obedience as well as firm enforcement of family rules. Responsiveness refers to the degree to which parents express warmth, acceptance and respect for the child's developmental needs. These two dimensions yield four types of parenting styles in the literature (Pellerin, 2005[20]):

- *Authoritative*: parents who are both demanding and responsive. They communicate effectively with their children, praise them when they are well-behaved and discipline them when they are not. This type of parenting is associated with a number of positive outcomes in children, including high levels of academic achievement, greater self-esteem and self-efficacy (Guyer et al., 2015[21]), and a lower likelihood of bullying (both as perpetrator and victim) (Georgiou, Ioannou and Stavrinides, 2017[22]).
- *Authoritarian*: parents who are demanding yet not responsive. They tend to use power, prohibition and punishment to control and achieve obedience (Chen, Dong and Zhou, 1997[23]). This type of parenting has been linked to various negative effects on child mental health, including depressive symptoms (Uji et al., 2014[24]; King, Vidourek and Merianos, 2016[25]). The relationship between authoritarian parenting and academic development is inconsistent across countries and cultures.
- *Permissive*: parents who are very responsive but not demanding. They are usually described as accepting, loving and non-punitive; they set few rules and standards for child behaviours, emphasising freedom more than responsibility. Children of permissive parents tend to have lower academic achievement and engagement (Lamborn et al., 1991[26]), and youth with permissive parents are more likely to be engaged in bullying of others (Dehue et al., 2012[27]). However they have also been found to have higher self-esteem, at least in some cultures (Calafat, 2014[28]).
- *Neglectful*: parents who are neither demanding nor responsive. They offer little supervision, have no expectation for behaviours and show little to no affection and support. Children of neglectful parents tend to have the lowest levels of academic achievement, are more likely to be aggressive, disruptive and non- cooperative, and experience emotional problems, such as depression and suicide ideation (Hildyard and Wolfe, 2002[29]; Singh and Behmani, 2018[30]).

Evolution of parenting styles

In addition to traditional parenting styles, a large number of other approaches exist. Many are promoted as a "new" way of parenting that will help children be more successful in school, at work or in life more broadly. However, many of the claims made about the potential positive impacts of modern parenting styles are not born out by research or, in fact, researched at all. Table 4.1 provides an overview of the various parenting styles, traditional and modern, and the (potential) effects on children. It also indicates to what extent the claims of impact have been the subject of academic study.

Table 4.1. Overview of parenting styles

Types of parenting, potential effects claimed, whether or not research exists/supports those claims.

Types	Definition	Potential effects on children	Research
Traditional Styles			
Authoritarian	Characterised by high control (demandingness) and low warmth (responsiveness).	Children develop behavioural and emotional problems as well as inadequate social skills.	Extensive
Authoritative	Characterised by high control (demandingness) and high warmth (responsiveness).	Children have positive academic, social, emotional, and physical developmental outcomes.	Extensive
Permissive	Characterised by low control (demandingness) and high warmth (responsiveness).	Children have lower academic achievement and engagement; however show higher self-esteem in some cultures.	Extensive
Uninvolved/ Neglectful	Characterised by low control (demandingness) and low warmth (responsiveness).	Children are prone to bullying (and being bullied), mental ailments, and academic failure.	Extensive
"Modern" styles (not all are new)			
Attachment/ Intuitive/ Natural	Aimed at strengthening parent-child bond by quickly and consistently meeting the emotional and physical needs of a child.	Children develop a sense of security and a positive attitude to life, believing that the world is a good place.	No
Buddy	Placing popularity with their child above establishing limits or boundaries.	Children become spoiled and ill-behaved.	No
Free-range	Focusing on trusting children by equipping them with the skills to stay safe and then backing off.	Children grow up to be able to handle mistakes, take responsibility for their actions, as well as be more resilient and happy.	No
Helicopter	When parents constantly hover above their children to protect them from harm.	Children less likely to be resilient and more likely to experience anxiety and depression.	Since 2004
Incubator "hot" house	Putting their children into learning earlier than appropriate for their cognitive age and developmental level.	Children thrive above their peers, especially academically, OR they develop anxiety, perfectionism, and depression.	No
Lawnmower/ Snowplough	Clearing a path and mowing down potential obstacles in their child's way.	Children become insecure about their ability to overcome adversity. Teenagers become resentful of their parents' control.	No
Narcissistic/ Accessory	Narcissistic parents identify themselves with the accomplishments of their children.	Children' identity is threatened. Unhealthy co-dependency emerges, with both parent and child depending on each other for their sense of self-worth.	No
Paranoid	Obsessively keeping your child safe from any physical or psychological harm.	Children become more anxious and less confident.	No
Positive	Focusing on empowering children through unconditional support and guidance.	Children develop making decision by considering possibilities and learning that actions have consequences.	No
Quick-fix/ Band-Aid	Relying on fast solutions to temporarily fix a problem, instead of aiming for a real and lasting change.	Children learn to act based on warnings, rewards, or money and thus keep relapsing back to the same bad behaviours.	No
Slow/ Nurturant	A movement against hyper-parenting: providing time and space for children to find their own interests and become who they want to be.	Children develop the capability to face and handle troubles/ challenges in life.	No
Spiritual/ Holistic	Respecting a child's individuality and creating the space to develop his or her own beliefs.	Maximise innate wellness of the whole child by nurturing a child's physical, emotional, mental and spiritual health.	No
Tiger	Characterised by high levels of both negative *(strict rules)* and positive *(warmth and support)* parenting.	Children can either become more productive, motivated, and responsible OR they can struggle to function which may lead to depression, anxiety, and poor social skills.	Since 2014
Unconditional/ Conscious	Providing children with unconditional love and acceptance for who they are instead of what they do.	Children develop a high sense of self-esteem and self-worth.	No

As demonstrated by Table 4.1, there is a need for more research on the impact and effects of newer types of parenting. Gaps in our knowledge about the variety and impact of various parenting styles include:

- **Paucity of research:** Studies on modern parenting styles (e.g. tiger parenting, helicopter parenting, phubbing and sharenting) are limited in number and tend to uncritically reflect the practices, experience and opinions of parents.
- **Restricted range of methods**: most of the studies that do exist are based on surveys, questionnaires and self-reports. The lack of randomised controlled trials and longitudinal studies reduces our understanding of the causal relationships between parenting styles and the overall well-being of children. In addition, the lack of rigorous qualitative methods (such as focus groups or semi-structured interviews) including the child's point of view results in the loss of rich information about how children experience different parenting styles.
- **Narrow cultural focus**: Studies in parenting styles tend to focus on Caucasian families in Western countries. As parenting is influenced by culture and context, a broader focus would help improve the validity and generalisability of findings (Gicevic et al., 2016[31]).

Spotlight on helicopter parenting

Helicopter parenting is the practice of "hovering around" one's child to protect them from potential harm. Although common across the OECD (see Table 4.2), there is little research on its impact. What research does exist is conflicting: on the one hand, children of helicopter parents are more likely to have lower grades, lower level of engagement at school, as well as lower self-efficacy and resilience (Shaw, 2017[32]). It is also associated with depression, anxiety, binge drinking and sexual risk taking among college students as well as with lower levels of psychological well-being (Odenweller, Booth-Butterfield and Weber, 2014[33]; LeMoyne and Buchanan, 2011[34]; Segrin et al., 2012[35]; Bendikas, 2010[36]).

On the other hand, high parental involvement positively correlates with better psychological adjustment and life satisfaction among adult children and improved general physical health (Fingerman et al., 2012[37]).

From an education perspective, helicopter parenting is challenging for teacher-parent relationships. Helicopter parents often question the authority of the teacher, side with their child in situations of conflict between the teacher and their child, and are very involved in the daily routine of the class, sometimes to an uncomfortable degree (Dor and Rucker-Naidu, 2012[38]).

Table 4.2. Helicopter parenting around the world

Countries/languages	Terms
Austria/Germany	Helikopter-Eltern or Helikoptereltern (direct translation)
Canada/United States	• helicopter parents • tiger mother/father • drone parents • overinvolved parents, overprotective parenting • snowplough parent (CAN) • free range parenting (opposite of helicopter parenting)

Chile/Mexico/Spain	• padres “helicóptero” • padres sobreprotectores / hiperprotectores • hiperpaternidad
China	怪獸家長 (monster parents: from cradle until the child forms a family/or longer)
Czech Republic	vrtulníkové rodiče
Denmark	• helikopter forældre (helicopter parent) • Krusing forældre (curling parent)
Estonia	• ülehoolitsev vanem” (overcaring parent) • kuid ka “kanaema” (which is gendered, chicken mother)
Finland	• helikopterivanhemmuus” and “helikopterivanhempi” • curling-vanhemmuus (curling parenting) • gendered: "kalenteriäiti" (direct translation calendar mother)
Flanders/Netherlands	helikopterouder , synonyms “hyperouder,” “hyperopvoeder,”
France	• parents hélicoptères • parents surprotecteurs • mère poule
Hungary	• helikopterszülők/ helikopter szülőség • borostyánszülő (ivy parent, who wraps around the child like ivy around a building)
Iceland	• Þyrluforeldrar* (infrequent) • bómullarbörn (cotton wool kids)
Ireland/United Kingdom Australia/New Zealand	• cotton-wool culture • hyper-parenting • overinvolved parents, overprotective parenting • micro-parenting (from micro-managing (NZ/AUS)) • lawnmower parent (Ireland) • to mollycoddle
Italy	• genitori elicottero ("helicopter parents") • genitori Iper-presenti • genitori-chioccia (hen parents)
Japan	• モンスターペアレンツ (monster parents: overprotective, mostly for school aged children) • ヘリコプターペアレンツ (helicopter parents: mostly for parents with college students) • 過保護 (kahogo): overprotective parents • 過干渉 (kakansho): excessive meddling • 過管理 (ka kan ri) excessive management/controlling
Korea	• 극성부모/교육 (overly motivated parenting) • 과잉보호 (overprotective parenting) • 헬리콥터 부모 (helicopter parenting) • 드론 부모 (the drone parents) • 돼지 엄마 (pig mother, one who has all the latest information related to education, schools, cram schools etc)
Latvia	• pārrūpīgi vecāki" (overcaring parents) • "cāļu māte" (chicken mother)
Norway	• helikopterforeldre”, “curlingforeldre” • tiger parents”/”tigerforeldre”
Poland	nadopiekuńczych rodziców (over-protective parents)
Portugal/Brazil	• pais helicóptero • pai/mãe galinha’ (Portugal) • mãe coruja (owl mother) (Brazil)
Russia	• родитель-вертолёт or Вертолеты (Vertolety; helicopters) • “мама-наседка” or “мать-наседка” (hen mother)
Sweden	curlingförälder (overprotective parenting)
Turkey	korumaci ebeveyn
Viet Nam	• cha me□ tru□c thăng • bô□ me□ tru□c thăng

Parenting behaviours in the digital world

In addition to parenting styles, there are also parenting behaviours that have emerged as a result of the omnipresence of technology in our lives. These are not neutral, and scholars are increasingly highlighting the potential negative impacts. Two examples are briefly explained below (see Chapter 6 for a more thorough discussion).

- *Phubbing*: also called "technoference", when technology use is associated with interruption in communication between parents and children or between couples. This behaviour appears to be very common: in one study, more than 50% of respondents reported not responding to their children when engaging with their mobile phones and more than 80% found it hard to look away from the phone even during conversations with their families (Hiniker et al., 2015[39]). Impacts include a potential vicious cycle whereby parents become unresponsive to their children and/or respond harshly to misbehaviours (Radesky et al., 2015[40]), while children experience distress when caregivers shift their attention to a digital device (Khourochvili, 2017[41]) and engage in risky behaviours to regain parental attention (Kildare and Middlemiss, 2017[42]).
- *Sharenting*: parents oversharing information about their children on social media. The emerging literature on “sharenting” is qualitative in nature and based mostly on surveys. “Sharenting” is a common practice among modern parents, especially mothers (Brosch, 2016[43]; Muge Marasli et al., 2016[44]). It allows parents to express pride in their children, to satisfy their need for self-realisation, social approval, as well as social comparison, as well as seek parenting-related advice and social support (Wagner and Gasche, 2018[45]). Children, however, express frustration with parents oversharing, especially posting inappropriate photos of them (naked and semi-naked or showing them in unfavourable situations) (Hiniker, Schoenebeck and Kientz, 2016[46]; Moser, Chen and Schoenebeck, 2017[47]).

Box 4.1. Sharenting

Although parents enjoy “sharenting”, several studies caution against possible risks, such as violating children's right to privacy, children getting embarrassed or hurt and the potential for digital risks in the future.

Some parents are well aware of these risks and engage in protective practices such as face-covering or blurring identifying information (Wagner and Gasche, 2018[45]). Other suggested best practices include (Steinberg, 2017[48]):

- familiarising themselves with the privacy policies of the sites with which they share
- setting up notifications to alert them when their child’s name appears in a Google search result
- considering anonymous sharing and avoiding sharing their child’s actual location
- giving their child “veto power” over online disclosures
- considering not sharing naked or semi-naked pictures of their child
- considering the effect sharing can have on their child’s current and future sense of self and well-being.

Modern friendships

Friendships are essential to children, occupying a huge part of their time and attention while providing them with social, emotional and functional support during their growth (Foucault Welles, Van Devender and Contractor, 2010[49]; Helliwell and Huang, 2013[50]). As children go online at earlier ages and stay connected for longer, virtual interaction — liking pictures, gaming or chatting — has become an indispensable part of their daily lives (Hooft Graafland, 2018[51]). As a result, modern children are increasingly making and developing friendships online (Zhang, 2016[52]; Lenhart et al., 2015[53]; Holloway and Livingstone, 2013[54]).

Despite this, little is known about virtual peers.[2] Are they simply contacts children have online? When would they be considered friends (by traditional measures of friendship or by new ones)?

Understanding virtual friendships

As online communication evolves, the line between online and offline friendships becomes increasingly blurry. Early studies in the field generally defined the former as originating online and the latter as originating offline (Mesch and Talmud, 2007[55]). However this no longer captures the complex reality of friendships that start in real life and then extend to digital worlds (e.g. friends who use Snapchat/ Instagram to keep in touch with schoolmates after school) or friendships that start online then extend to face-to-face settings (e.g. friends who meet through online games and then hang out in person) (Antheunis, Valkenburg and Peter, 2007[56]; Parks and Floyd, 2006[57]; Parks and Roberts, 1998[58]).

In general, children meet online peers most commonly in virtual worlds, online games and social networking sites (SNS) (Livingstone et al., 2011[59]; Lenhart et al., 2015[53]). Adolescents are more likely to have a social media or video-sharing profile than younger children, although the percentage of 8-11 year-olds with an online presence is growing ((Ofcom, 2019[60]), see also Chapter 2). This increase in participation of younger users is notable, particularly since many social media platforms prohibit users under the age of 13 years old. Thus, the growing number of children from as young as three to five years old online also raises questions about the responsibilities of the industry and parents (see Chapters 6 and 10).

Comparing virtual to traditional friendships

Literature on friendships has explored two main questions: (1) How do children make friends? (2) What are features of high quality friendships, and what benefits are derived from them?

Making friends

Virtual friendships are influenced by the same factors that drive the formation of face-to-face friendships, although with some differences:

- *Homophily:* Children befriend those similar to them (either in personality or demographics) because such similarity is perceived as self-validating (Antheunis, Valkenburg and Peter, 2007[56]). McPherson, Smith-Lovin, and Cook (2001[61]) found that in traditional friendships, similarity of personality is a weaker determining factor than similarity in demographic characteristics—same race and ethnicity are the strongest predictors, followed by same age, religion, education,

occupation and gender. In virtual friendships, no evidence has been found to support homophily in gender, race, religion and education. Only homophily in age is documented: Utz and Jankowski (2016[62]) found that players in virtual worlds and video games are much more likely to interact with other players of similar age.

- *Proximity:* Children traditionally befriend those in close physical proximity, as there are more opportunities for hanging out, exchanging information and participating in joint activities (Mesch and Talmud, 2006[63]). Certain proximity mechanisms that predict real-life friendships also apply digitally. Avatar proximity—how close avatars stand to others—is important (Chesney et al., 2014[64]): players in virtual worlds and online games tend to make friends with avatars standing around their own avatars instead of approaching and sending friend requests to random ones. However, in terms of physical geography, results are conflicting.
- *Status:* Children tend to befriend popular children who already have many friends. As in traditional friendships, status matters in virtual friendships: users with superior status are more likely to receive friend requests and form friendships online (Utz and Jankowski, 2016[62]). The indicators of status vary according to digital platforms. On SNS, a high status means a long list of friends/contacts. In gaming, it means a high level of experience, a significant amount of virtual money, an elaborated avatar, and a premium account, which may require a monthly fee.
- *Social attraction:* Children traditionally befriend those to whom they feel socially attracted, as the communication is usually more pleasant (Berndt, Hawkins and Hoyle, 1986[65]). By stimulating social exchange and interactions between friends, social attraction not only helps initiate friendship but also helps increase friendship quality (Reagans, 2005[66]). Social attraction has been found to be significantly less salient in online friendships than in offline friendships (Antheunis, Valkenburg and Peter, 2007[56]).

The quality and impact of friendships

There are three interrelated aspects of friendships:

- mutual caring: the idea that friends are responsive to each other' needs and are willing to help when necessary (Berndt, Hawkins and Hoyle, 1986[65])
- companionship: the notion that friends enjoy spending time together, either through frequent communication or shared activities (Munn, 2012[67])
- intimacy: the idea of self-disclosure where friends share personal and private information, thoughts and feelings with each other (Żurko, 2011[68]; Cocking and Matthews, 2001[69]).

High levels of mutual caring, companionship and intimacy indicate a high quality friendship. These three elements appear in both traditional and online friendships. In fact, it has been argued that digital worlds increase companionship and intimacy among children, as they can contact each other at any time as long as they have access to a connected device. Online friendships also help children who feel alienated by offline groups because they can find individuals with similar interests which may not fit into the norm of their (real-life) social context, for example children who are socially anxious, children with disabilities and LGBTQ+ children.

In sum

Families and peers have enormous influence on children and adolescents' well-being and later life outcomes. Yet our world is evolving and so is our concept of family. The dominant family model in the twentieth century – characterised by a breadwinning father and a mother taking care of the household and a number of children – has changed. Over the past fifty years the number of reconstituted families and single parent households has risen, families have become smaller and individuals are deciding to have children later in life, or not at all.

Styles of parenting are also evolving as parents seek to give their children the best start in life (e.g. helicopter parents). Social media permit parents and families to reach larger audiences with their curated images of themselves, and new parental behaviours are emerging as a result, not all of them positive. Although more research is needed on this topic, examples of "sharenting" and "phubbing/technoference" are already demonstrating the importance of understanding how technology use by adults can have an impact on the well-being of the children around them.

Outside the family setting, social interactions with friends have also shifted significantly in the last decade. Online friendships are important for children and youth, and texting, instant messaging and social networking sites are primarily used to reinforce existing relationships. The line between online and offline friendships is becoming increasingly blurry.

All of these issues will continue to increase in importance in the coming years. There is an important series of questions of how education (starting with early childhood and extending across the lifespan) can best support families, especially the poorest and most disadvantaged among them. Equally important is better charting the connections between the supporting players in a child's life (family and friends) and how they are evolving in our modern world. The following chapters address all of these themes in more detail.

Notes

[1] As of September 2019.

[2] In this chapter "virtual" peers and friendships will be used interchangeably with "online" and "digital" peers and friendships.

References

Antheunis, M., P. Valkenburg and J. Peter (2007), "The quality of online, offline, and mixed-mode friendships among users of a social network site", *Journal of Psychosocial Research on Cyberspace*, Vol. 6/3, http://dx.doi.org/10.5817/CP2012-3-6. [56]

Bendikas, E. (2010), *Do Helicopter Parents Cause Life Turbulence for Their Offspring? Implications of Parental Psychological Control for College Students' Adjustment*, https://etd.ohiolink.edu/pg_10?0::NO:10:P10_ACCESSION_NUM:miami1276092075#abstract-files. [36]

Berndt, T., J. Hawkins and S. Hoyle (1986), "Changes in friendship during a school year: Effects on children's and adolescents' impressions of friendship and sharing with friends", *Child Development*, Vol. 57/5, p. 1284, http://dx.doi.org/10.2307/1130451. [65]

Bongaarts, J., B. Mensch and A. Blanc (2017), "Trends in the age at reproductive transitions in the developing world: The role of education", *Population Studies*, Vol. 71/2, pp. 139-154, http://dx.doi.org/10.1080/00324728.2017.1291986. [1]

Brosch, A. (2016), "When the child is born into the Internet: Sharenting as a growing trend among parents on Facebook", *The New Educational Review*, http://dx.doi.org/10.15804/tner.2016.43.1.19. [43]

Calafat, A. (2014), "Which parenting style is more protective against adolescent substance use? Evidence within the European context.", *Drug & Alcohol Dependence*, Vol. 138, pp. 185-192, http://dx.doi.org/10.1016/j.drugalcdep.2014.02.705. [28]

Carlson, M. and M. Corcoran (2001), "Family structure and children's behavioral and cognitive outcomes", *Journal of Marriage and Family*, Vol. 63/3, pp. 779-792, http://dx.doi.org/10.1111/j.1741-3737.2001.00779.x. [11]

Chan, M., A. Lake and K. Hansen (2017), "The early years: Silent emergency or unique opportunity?", *The Lancet*, Vol. 389/10064, pp. 11-13, http://dx.doi.org/10.1016/S0140-6736(16)31701-9. [8]

Chen, X., Q. Dong and H. Zhou (1997), "Authoritative and authoritarian parenting practices and social and school performance in chinese children", *International Journal of Behavioral Development*, Vol. 21/4, pp. 855-873, http://journals.sagepub.com/doi/pdf/10.1080/016502597384703 (accessed on 14 June 2018). [23]

Chesney, T. et al. (2014), "Determinants of friendship in social networking virtual worlds", *Communications of the Association for Information Systems*, Vol. 34/72, pp. 1397-1416, http://aisel.aisnet.org/cais/vol34/iss1/72. [64]

Cocking, D. and S. Matthews (2001), "Unreal friends", *Ethics and information technology*, Vol. 2/4, pp. 223-231, http://dx.doi.org/10.1023/A:1011414704851. [69]

Dehue, F. et al. (2012), "Cyberbullying and traditional bullying in relation to adolescents' perception of parenting", *Journal of cybertherapy & rehabilitation*, Vol. 5/1, pp. 25-34, www.researchgate.net/publication/233919272_Cyberbullying_and_traditional_bullying_in_relation_to_adolescents'perception_of_parenting. [27]

Dor, A. and T. Rucker-Naidu (2012), "Teachers' attitudes toward parents' involvement in school: Comparing teachers in the USA and Israel", *Issues in Educational Research.*, Vol. 22, pp. 246-262, https://eric.ed.gov/?id=EJ997341. [38]

Duncan, G. et al. (2012), "The importance of early childhood poverty", *Social Indicators Research*, Vol. 108/1, pp. 87-98, http://dx.doi.org/10.1007/s11205-011-9867-9. [13]

Fingerman, K. et al. (2012), "Helicopter parents and landing pad kids: Intense parental support of grown children", *Journal of Marriage and Family*, Vol. 74/4, pp. 880-896, http://dx.doi.org/10.1111/j.1741-3737.2012.00987.x. [37]

Foucault Welles, B., A. Van Devender and N. Contractor (2010), *Is a Friend a Friend?*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/1753846.1754097. [49]

Georgiou, S., M. Ioannou and P. Stavrinides (2017), "Parenting styles and bullying at school: The mediating role of locus of control", *International Journal of School & Educational Psychology*, Vol. 5/4, pp. 226-242, http://dx.doi.org/10.1080/21683603.2016.1225237. [22]

Gicevic, S. et al. (2016), "Parenting and childhood obesity research: A quantitative content analysis of published research 2009-2015", *Obesity Reviews*, Vol. 17/8, pp. 724-734, http://dx.doi.org/10.1111/obr.12416. [31]

Guyer, A. et al. (2015), "Temperament and parenting styles in early childhood differentially influence neural response to peer evaluation in adolescence", *Journal of Abnormal Child Psychology*, Vol. 43/5, pp. 863-874, http://dx.doi.org/10.1007/s10802-015-9973-2. [21]

Hartup, W. (1992), "Peer relations in early and middle childhood", in *Handbook of Social Development*, Springer, Boston, MA, https://link.springer.com/chapter/10.1007/978-1-4899-0694-6_11. [12]

Hay, D. (2005), "Early peer relations and their impact on children's development", *Encyclopedia on Early Childhood Development*, www.child-encyclopedia.com/peer-relations/according-experts/early-peer-relations-and-their-impact-childrens-development. [3]

Haynie, D. and D. Osgood (2005), "Reconsidering peers and delinquency: How do peers matter?", *Social Forces*, Vol. 84/2, pp. 1109-1130, http://dx.doi.org/10.1353/sof.2006.0018. [4]

Helliwell, J. and H. Huang (2013), "Comparing the happiness effects of real and on-line friends", *PLoS ONE*, http://dx.doi.org/10.1371/journal.pone.0072754. [50]

Hildyard, K. and D. Wolfe (2002), "Child neglect: Developmental issues and outcomes", *Child Abuse & Neglect*, Vol. 26/6-7, pp. 679-695, http://dx.doi.org/10.1016/S0145-2134(02)00341-1. [29]

Hinde, R. et al. (1985), "Incidence of "friendship" and behavior toward strong associates versus nonassociates in preschoolers", *Child Development*, Vol. 56/1, pp. 234-245, http://dx.doi.org/10.2307/1130190. [5]

Hiniker, A., S. Schoenebeck and J. Kientz (2016), *Not at the Dinner Table: Parents' and Children's Perspectives on Family Technology Rules*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/2818048.2819940. [46]

Hiniker, A. et al. (2015), "Texting while parenting: How adults use mobile phones while caring for children at the playground", http://dx.doi.org/10.1145/2702123.2702199. [39]

Holloway, D. and S. Livingstone (2013), *Zero to Eight. Young Children and Their Internet Use Zero to Eight*, LSE, London: EU Kids Online, http://www.eukidsonline.net. [54]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [51]

Jaffee, S. et al. (2015), "Interactive effects of early and recent exposure to stressful contexts on cortisol reactivity in middle childhood", *Journal of Child Psychology and Psychiatry*, Vol. 56/2, pp. 138-146, http://dx.doi.org/10.1111/jcpp.12287. [14]

Khourochvili, M. (2017), *Technology and Caregiver-child Interaction: The Effects of Parental Mobile Device Use on Infants*, York University, https://yorkspace.library.yorku.ca/xmlui/bitstream/handle/10315/34309/Khourochvili_Mariami_2017_Masters.pdf?sequence=2&isAllowed=y. [41]

Kildare, C. and W. Middlemiss (2017), "Impact of parents mobile device use on parent-child interaction: A literature review", *Computers in Human Behavior*, Vol. 75, pp. 579-593, http://dx.doi.org/10.1016/J.CHB.2017.06.003. [42]

King, K., R. Vidourek and A. Merianos (2016), "Authoritarian parenting and youth depression: Results from a national study", *Journal of Prevention & Intervention in the Community*, Vol. 44/2, pp. 130-139, http://dx.doi.org/10.1080/10852352.2016.1132870. [25]

Lamborn, S. et al. (1991), "Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families", *Child Development*, Vol. 62/5, p. 1049, http://dx.doi.org/10.2307/1131151. [26]

Landstedt, E., A. Hammarström and H. Winefield (2015), "How well do parental and peer relationships in adolescence predict health in adulthood?", *Scandinavian Journal of Public Health*, Vol. 43/5, pp. 460-468, http://dx.doi.org/10.1177/1403494815576360. [19]

LeMoyne, T. and T. Buchanan (2011), "Does "hovering" matter? Helicopter parenting and its effect on well-being", *Sociological Spectrum*, Vol. 31/4, pp. 399-418, http://dx.doi.org/10.1080/02732173.2011.574038. [34]

Lenhart, A. et al. (2015), *Teens, Technology, and Friendships*, www.pewinternet.org/2015/08/06/teens-technology-and-friendships/. [53]

Livingstone, S. et al. (2011), *Risks and Safety on the Internet: The Perspective of European Children: Full Findings and Policy Implications From the EU Kids Online Survey of 9-16 Year Olds and Their Parents in 25 Countries*, LSE: EU Kids online, http://eprints.lse.ac.uk/33731/. [59]

Mcpherson, M., L. Smith-Lovin and J. Cook (2001), "Birds of a feather: Homophily in social networks", *Annual Review of Sociology*, Vol. 27, pp. 415-444, www.researchgate.net/publication/200110353_Birds_of_a_Feather_Homophily_in_Social_Networks. [61]

Mesch, G. and I. Talmud (2007), "Similarity and the quality of online and offline social relationships among adolescents in Israel", *Journal of Research on Adolescence*, Vol. 17/2, pp. 455-465, http://dx.doi.org/10.1111/j.1532-7795.2007.00529.x. [55]

Mesch and Talmud (2006), "Online friendship formation, communication channels, and social closeness", *International Journal of Internet Science*, Vol. 1/1, pp. 29-44. [63]

Moser, C., T. Chen and S. Schoenebeck (2017), *Parents' and Children's Preferences About Parents Sharing About Children on Social Media*, http://dx.doi.org/10.1145/3025453.3025587. [47]

Muge Marasli et al. (2016), "Parents' shares on social networking sites about their children: Sharenting", *The Anthropologist*, Vol. 24/2, pp. 399-406, http://dx.doi.org/10.1080/09720073.2016.11892031. [44]

Munn, N. (2012), "The reality of friendship within immersive virtual worlds", *Ethics and Information Technology*, Vol. 14/1, pp. 1-10, http://dx.doi.org/10.1007/s10676-011-9274-6. [67]

Odenweller, K., M. Booth-Butterfield and K. Weber (2014), "Investigating helicopter parenting, family environments, and relational outcomes for millennials", *Communication Studies*, Vol. 65/4, pp. 407-425, http://dx.doi.org/10.1080/10510974.2013.811434. [33]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-being*. [16]

OECD (2015), *Skills for Social Progress*, Organisation for Economic Co-operation and Development, Paris, www.oecd-ilibrary.org/content/book/9789264226159-en. [9]

OECD (2011), *Doing Better for Families*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264098732-en. [2]

Ofcom (2019), *Children and Parents: Media Use and Attitudes Report 2018*, Ofcom, www.ofcom.org.uk/__data/assets/pdf_file/0024/134907/Children-and-Parents-Media-Use-and-Attitudes-2018.pdf. [60]

Ost, B. (2010), "The role of peers and grades in determining major persistence in the sciences", *Economics of Education Review*, Vol. 29/6, pp. 923-934, http://dx.doi.org/10.1016/j.econedurev.2010.06.011. [6]

Parks, M. and K. Floyd (2006), "Making friends in cyberspace", *Journal of Computer-Mediated Communication*, Vol. 1/4, pp. 0-0, http://dx.doi.org/10.1111/j.1083-6101.1996.tb00176.x. [57]

Parks, M. and L. Roberts (1998), "`Making moosic': The development of personal relationships on line and a comparison to their off-line counterparts", *Journal of Social and Personal Relationships*, Vol. 15/4, pp. 517-537, http://dx.doi.org/10.1177/0265407598154005. [58]

Pedersen, S. et al. (2007), "The timing of middle-childhood peer rejection and friendship: Linking early behavior to early-adolescent adjustment", *Child Development*, Vol. 78/4, pp. 1037-1051, http://dx.doi.org/10.1111/j.1467-8624.2007.01051.x. [15]

Pellerin, L. (2005), "Applying Baumrind's parenting typology to high schools: Toward a middle-range theory of authoritative socialization", *Social Science Research*, Vol. 34, pp. 283-303, http://dx.doi.org/10.1016/j.ssresearch.2004.02.003. [20]

Radesky, J. et al. (2015), "Maternal mobile device use during a structured parent-child interaction task.", *Academic pediatrics*, Vol. 15/2, pp. 238-44, http://dx.doi.org/10.1016/j.acap.2014.10.001. [40]

Reagans, R. (2005), "Preferences, identity, and competition: Predicting tie strength from demographic data", *Management Science*, Vol. 51/9, pp. 1374-1383, http://dx.doi.org/10.1287/mnsc.1050.0389. [66]

Reitz, A. et al. (2014), "How peers make a difference: The role of peer groups and peer relationships in personality development", *European Journal of Personality*, Vol. 28/3, pp. 279-288, http://dx.doi.org/10.1002/per.1965. [7]

Schneider, B., L. Atkinson and C. Tardif (2001), "Child-parent attachment and children's peer relations: A quantitative review.", *Developmental psychology*, Vol. 37/1, pp. 86-100, www.ncbi.nlm.nih.gov/pubmed/11206436. [10]

Segrin, C. et al. (2012), "The association between overparenting, parent-child communication, and entitlement and adaptive traits in adult children", *Family Relations*, Vol. 61/2, pp. 237-252, http://dx.doi.org/10.1111/j.1741-3729.2011.00689.x. [35]

Shaw, K. (2017), *Hovering or Supporting: Do Parenting Behaviours Affect Their College-offspring's Perseverance?*, Miami University, https://etd.ohiolink.edu/!etd.send_file?accession=miami1498148068465252&disposition=inline. [32]

Singh, V. and R. Behmani (2018), "Parenting style and adolescent suicide ideation: A review", *International Journal of Academic Research and Development*, Vol. 3/2, pp. 1245-1252, www.academicsjournal.com/download/1848/3-2-186-322.pdf. [30]

Stavropoulos, V. et al. (2015), "Low family satisfaction and depression in adolescence: The role of self-esteem", *Journal of Educational and Developmental Psychology*, Vol. 5/2, p. 109, http://dx.doi.org/10.5539/jedp.v5n2p109. [18]

Steinberg, S. (2017), *Sharenting – In Whose Interests? Parenting for a Digital Future*, http://eprints.lse.ac.uk/79156/. [48]

Telzer, E. et al. (2015), "The quality of adolescents' peer relationships modulates neural sensitivity to risk taking", *Social Cognitive and Affective Neuroscience*, Vol. 10/3, pp. 389-398, http://dx.doi.org/10.1093/scan/nsu064. [17]

Uji, M. et al. (2014), "The impact of authoritative, authoritarian, and permissive parenting styles on children's later mental health in Japan: Focusing on parent and child gender", *Journal of Child and Family Studies*, Vol. 23/2, pp. 293-302, http://dx.doi.org/10.1007/s10826-013-9740-3. [24]

Utz, S. and J. Jankowski (2016), "Making ''friends'' in a virtual world: The role of preferential attachment, homophily, and status", *Social Science Computer Review*, Vol. 34/5, pp. 546-566, http://dx.doi.org/10.1177/0894439315605476. [62]

Wagner, A. and L. Gasche (2018), "Sharenting: Making decisions about other's privacy on social networking sites", *Multikonferenz Wirtschaftsinformatik*, http://mkwi2018.leuphana.de/wp-content/uploads/MKWI_81.pdf. [45]

Zhang, H. (2016), *Digital Literacy and Growth of Children in Urban China in the New Media Age*, https://milunesco.unaoc.org/wp-content/uploads/Final-version-Digital-Literacyand-Growth-of-Children-in-Urban-China-in-the-New-Media-Age.pdf. [52]

Żurko, M. (2011), "Friendship during adolescence : The necessity for qualitatitive research of close relationships", *Polish Journal of Applied Psychology*, Vol. 9/1, pp. 21-38, www.bibliotekacyfrowa.pl/Content/38639/02_Magdalena_Zurko.pdf. [68]

Chapter 5. Online and offline relationships

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Youth social circles used to be restricted to friends met in the neighbourhood, at school or through extracurricular activities. The rise of the Internet has made geographical proximity and social similarity less crucial in making friends, and digital means have facilitated youth broadening their social circles. However, the proliferation of online relationship formation has led to concerns that they replace "higher quality" offline relationships. On the other hand, online means can expand and diversify children's friendship networks and can empower disadvantaged groups by enhancing weak ties. Online ties supplement, rather than replace, face-to-face connection, and online communication can reinforce offline friendships. Furthermore, whether a friendship forms online or offline is less important than if these newly formed friendships move to communication modalities such as telephone and face-to-face contact with richer verbal and non-verbal cues.

Introduction

Online sociability is an integral part of an individual's digital literacy and cultural consumption of technological artifacts (e.g. desktops, laptops, smartphones). The capacity of the Internet to facilitate online contact, especially between geographically remote people, has caught the popular imagination and the empirical attention of researchers studying online relationship formation.

Prior to the Information Age (characterised by the Digital Revolution in the 21st century), adolescents' social choices were greatly restricted by time and place. Their lack of geographical mobility and their belonging to an age group expected to go to school structurally reduced their social circle to friends who they met in the neighbourhood, at school and through extracurricular activities. In this sense, proximity was a central social constraint for relationship formation. Living in the same neighbourhood and attending the same school often resulted in a high level of social similarity.

Internet and mobile access and communication have produced a number of changes in social communication patterns. Relationship formation has expanded from geographical spaces of interaction (i.e. neighbourhood, school) to digital spaces (i.e. Social Networking Sites (SNS), such as Facebook). Friendships that were in the past based on social groups with clear boundaries and social expectations of mutual interaction have become diverse and dispersed personalised peer networks that lack clear boundaries and norms of social behaviour (Rainie and Wellman, 2012[1]). Channels of interpersonal communication are multiplex, including mobile applications and diverse platforms of social media interaction, in addition to face-to-face and phone. As a result, the limits of interpersonal communication have become blurred. This includes perpetual contact with the social network from anywhere and at any time, personalised communication relying on ego networks[1] rather than social groups, content that is not necessarily private and can be forwarded without knowledge of the original sender/curator, and activities that are coordinated through online and mobile social networks.

These major changes in the patterns, frequency, content and quality in interpersonal friendship formation, maintenance and communication have been highlighted by a large number of studies that focus on different aspects of this major social change. This chapter focuses on one important aspect, namely the similarities, differences and overlap between youth online and offline social relationships.

Evolving perceptions of online and offline relationships

With the growing popularity and ubiquity of social media, the public, and the research to some extent, has been concerned with the proliferation of online relationships and the concern that these are replacing higher quality offline relationships. Studies conducted in the early 90's found that adolescents in Western countries were reporting that they maintained interpersonal communication with others they met online as well as with friends they met face-to-face. For example, in a U.S. study, 14% of American teenagers reported they had formed close online friendships (Wolak, Mitchell and Finkelhor, 2003[2]). A study in the United Kingdom found that 11% of the adolescents reported meeting new acquaintances online (Livingstone and Bovill, 2001[3]). In Israel, 12% reported having at least one close tie that was met online (Mesch and Talmud, 2006[4]).

At that time, online/offline relationships were defined according to the origin of the relationships and the space of interaction where the respondent indicated having met his/her

friends. Online relationships were those formed on SNSs including forums, chat rooms, gaming spaces and messenger platforms. Offline relationships were usually defined as those initiated in the neighbourhood, school or any other face-to-face space of social interaction.

It is important to recognise that a comparison between relationships designated as either online or offline may imply that they are mutually exclusive or opposed to each other. Yet over time, it has become clear that interpersonal relationships are created, developed and sustained through integrated online and offline interaction. The entire range of offline relationships, from family through school and work to social relations in the wider neighbourhood, may also be present online in a manner that is rarely distinguished from one's offline life. Furthermore, some relationships created online eventually migrate to face-to-face settings. The popular perception of online relationships as relationships that can be contrasted with those in the 'real world' – inhabited by one's real or "more authentic" offline relationships – seems therefore simplistic and misleading. This corresponds to an earlier critique of the concept of 'virtual', a term prominent during the early years of Internet use. It is, however, essential for us as researchers to recognise these reservations and to acknowledge that the contrast between online/offline remains a primary mode by which people around the world understand and experience digital media.

Because of this perception of online/offline contrast, this paper starts with a summary of the perspectives that deal with the motivations and outcomes of online relationships formation.

Motivations for online relationship formation

The "*Rich-Get-Richer"* hypothesis proposes that individuals with higher extraversion, or who are more comfortable in social situations, would be more likely to use social media for online relationship formation, extending their social networks and enhancing the quality of their friendships (Kraut et al., 2002[5]; Desjarlais and Willoughby, 2010[6]). According to this hypothesis, individuals who are extraverted and who already have strong social skills would do better in sharing their views and asking for help online, thereby attaining additional social support and higher life satisfaction through cyberspace (Khan et al., 2016[7]).

Conversely, the *"Poor Get Poorer"* hypothesis argues that individuals who are introverted, have higher levels of social anxiety, and have poorer social skills and self-confidence, would be more likely to use the Internet to escape from and avoid problems in real life, potentially reinforcing negative outcomes (Armstrong, Phillips and Saling, 2000[8]).

On the contrary, the "*Social Compensation"* hypothesis proposes that individuals with higher levels of social anxiety or lower levels of social support use social media to create online relationships to compensate for their lack of social ties, as social anxiety is a barrier for offline relationship creation (Van Ingen and Wright, 2016[9]). According to this hypothesis, the relative anonymity of social media and the process of self-disclosure online render the social situation more comfortable for these individuals. This is due to a perceived lower risk for self-disclosure because of the lack of non-verbal cues (Schouten, Valkenburg and Peter, 2007[10]). Furthermore, the Internet may provide more opportunities for some people to get social support, explore their social and self-identities and improve their social skills, as well as a greater opportunity to utilise online coping resources (Van Ingen and Wright, 2016[9]). Additionally, Ellison and colleagues (2007[11]) argue that online activities are beneficial for individuals to form weak ties in SNSs, which would be very useful for

those with lower self-esteem to improve their social capital. On the other hand, they can be harmful for those with higher self-esteem since it would reduce their opportunities to maintain their strong offline ties. In other words, the "poor get richer" and the "rich get poorer."

Most of the previous perspectives focus on personality characteristics as motivations for online relationship formation. The "S*ocial Diversification"* hypothesis relies on social network and social capital assumptions to explain variations in these motivations for disadvantaged groups in society.

The social diversification hypothesis deals specifically with the motivations that create differences in the use of information and communications technology (ICT) among racial and ethnic minorities (Mesch and Talmud, 2010[12]; Gonzales, 2017[13]). Relying on the literature demonstrating the stratification of multicultural societies along ethnic and socio-economic lines, the social diversification hypothesis argues that network-based social closure, the exclusion of others by a group seeking to maintain its resources, affects the ability to obtain social capital and is more likely to benefit the dominant group's members (Mesch, Mano and Tsamir, 2012[14]). Based on this perspective, social media platforms might support the expansion of social relationships, including improving the access to information, knowledge and skills that are unavailable locally, and provide opportunities for the diversification of social relationships (Mesch and Talmud, 2010[12]). As Mazur and Kozarian (2010[15]) found in their study of older adolescents, despite the partial overlap of online and offline ties, online communication tends to diversify the structure of peer networks and expose youngsters to others who share their interests regardless of their age, gender or location. In this sense, the social diversification hypothesis argues that social media provides a platform for overcoming some of the existing segregation in society. Therefore, this perspective maintains that disadvantaged groups will have greater incentives to use SNSs to expand their social circle and overcome existing physical and social barriers to information and association. At the same time, majority groups will use the Internet to keep their existing relationships and maintain the closure of their network. In addition, they will be less likely than disadvantaged minorities to use SNSs like Facebook to expand their social ties.

The social diversification perspective emphasises the potential of social media platforms for empowering disadvantaged groups through affiliation with weak ties (Mazur and Kozarian, 2010[15]). Indeed, a study of the online practices of young adolescents in a large rural area in California planning for their vocational future determined that the youngsters relied on computer-mediated communication and the establishment of contacts with weak ties to access information unavailable to them locally (Robinson, 2011[16]). Similarly, the use of social media has been associated with the diversification of core networks of discussion (Hampton, Sessions and Her, 2011[17]). A study of a large sample of college students in the United States established that access to the Internet was still higher among white students than Latinos and African-Americans. However, when it comes to the use of social media platforms for content creation (e.g. blogs, video clips), a social capital enhancing activity, African-Americans and Hispanics reported higher average online content creation than white students, even after controlling for socio-economic status, gender and age, as well as Internet experience and psychological predictors (Correa and Jeong, 2011[18])

Since online relationships are generally created around a specific topic of mutual interest, they are considered weak ties, as they do not initially expand to all the spheres of concern and activity of the participants. Over time, online ties tend to include more personal and

intimate topics as they move toward becoming more holistic relationships (Mesch and Talmud, 2006[4]).

For young adolescents, SNSs may provide an opportunity to expand the size and composition of their social networks especially in disadvantaged or minority groups. Indeed, a study of Internet use in a representative sample of Greek and Turkish youth in Cyprus suggests the existence of a reverse digital divide, as the more disadvantaged community engaged more often in Internet use for self-expression and association with weak ties (Milioni, Doudaki and Demertzis, 2014[19]). Mesch (2018[20]) tested this hypothesis and investigated the role of race and ethnicity in the self-reported strength of the social ties of young adolescents on Facebook. Based on the social diversification hypothesis, which argues that in multicultural societies, race and ethnicity are key factors that shape the nature of associations, the study investigated whether there were ethnic and racial differences in the size and strength of the ties of adolescent Facebook users and the role of the strength of these ties in several positive outcomes. Using data from the Teens, Social Media, and Privacy Survey conducted by the Pew Research Center's Internet and American Life Project of 802 U.S. teenagers aged 12-17, Mesch concluded there were no differences in the total number of ties that adolescents from different ethnic and racial groups reported. However, African-Americans reported a significantly higher number of online weak ties, while white Americans had a significantly higher number of online strong ties. These results are consistent with the social diversification hypothesis.

Online ties and the structure of youth social networks

An important dimension of social networks often highlighted in the literature is the extent to which creating online social ties reduces, enlarges or does not change one's number of friends. Studies have warned that excessive Internet use may isolate adolescents from their friends (e.g. Šmahel and Blinka (2012[21])). Available data indicate that online relationship formation does not affect the size of a social network. A temporary decrease may be expected as more energy and time are invested in the creation of online ties; but over time, as online associations become integrated, the size of the network even slightly increases as new associations are included amongst existing ones (Valkenburg and Peter, 2007[22]).

In comparison to SNSs, mobile phones have had a similar effect on friendship formation in the Information Age. Igarashi, Takai and Yoshida (2005[23]), analysing text messages over cellular phones in Japan, found general support for the claim that mobile phones can change social networks among young people by increasing the number of possible contacts and promoting selective relationship formation. Mobile phones increase the frequency of communication, and allow for opportunities to expand interpersonal relationships (Igarashi, Takai and Yoshida, 2005[23]).

The effect of the expansion of social networks seems more pronounced on extroverts than on introverts. Overall, however, online relationship formation enlarges the social network for the majority of adolescents who choose to become involved in this activity (Mesch and Talmud, 2010[12]).

Associating with similar people is another social network dimension influenced by online relationship formation. One of the most significant and consistent findings reported in the literature is that social relationships are characterised by social similarity, or homophily. Studies on the formation of close social relationships have emphasised the importance of social similarity in friendship and attraction in intimate social relationships (McPherson, Smith-Lovin and Cook, 2001[24]; Mazur and Richards, 2011[25]). Similarity moulds network

ties and results in homogeneous social networks in terms of socio-demographic, behavioural and interpersonal characteristics. This tendency of individuals to associate with others who are similar to them has important social consequences. For example, similar individuals exchange information that suits their personal characteristics and social style. Contact with similar individuals limits personal social horizons and restricts the exposure to different others which can lead to the reproduction of social stereotypes (Mazur and Richards, 2011[25]).

Nevertheless, research has found that adolescents who create online social ties report a higher heterogeneity of their social network by age, gender and location. Mesch and Talmud (2010[12]) compared youngsters with online friends and with face-to-face friends for the respective average age difference between those friends and themselves. The former reported that their online friends were on average older than they were; the latter did not report this. The difference was small, with online friends being on average one and a half years older. To some extent, it can thus be argued that online friendship formation breaks through the barriers of age-grade segregation imposed by the social structure of schools.

Studies that compare the percentage of friends of the opposite sex as reported by youth with and without online friends have found less sex segregation for the former than for the latter (Mesch and Talmud, 2006[4]). Adolescents whose offline friends were similar in age, ethnic background and place of residence were more likely to report forming friendships online (Mesch and Talmud, 2006[4]).

Another component of the shared opportunity for mutual exposure is residential proximity. Proximity facilitates the likelihood of friendship formation and communication by increasing the probability that individuals will meet and interact. Proximity is of particular importance for adolescents limited in their geographic mobility, as they must rely on public transportation, which is not always reliable. For adolescents who are restricted in their physical mobility, and for whom the main arenas of social interaction are the school, the neighbourhood and extracurricular activities, the Internet represents a new focus of common activities. Adolescents connect to the Internet, chat and exchange email with friends, with friends of friends and with unknown individuals. In these activities, they encounter a new space that facilitates joint activities and social interaction. For adults, as well as for a large majority of adolescents, the Internet is an innovative place for social interaction, different from the phone and television.

An important consideration for youth online social networks is the perceived closeness of youth to their online ties, and the possible effect of these ties on their perceived closeness to their face-to-face ties. Online relationship formation is a dynamic process, and accordingly calls for longitudinal studies. The perception of being less close to online friends seems to depend on the developmental stage of the relationship. Forming online ties is a relatively newer phenomenon than forming face-to-face ties, and is based on narrow shared interests (Mesch and Talmud, 2006[4]). Relationships take time to develop and the process of moving towards being perceived as closer requires more investigation. Regarding their effect on existing ties, there is no evidence that youth are exchanging close friendships for distant and narrow ones. Online ties, then, seem not to replace but to supplement face-to-face connections.

Quality of offline and online ties

One of the key features of friendships is their quality, which refers to the experienced closeness, trust and understanding between friends. Over a decade ago, several studies

investigated and compared the quality of online versus offline friendships (Mesch and Talmud, 2006[4]). These studies consistently demonstrated that online friendships are perceived to be lower in quality than offline friendships (Mesch and Talmud, 2006[4]). Furthermore, although the quality of both online and offline friendships increased over time, the quality of online friendships improved significantly more than for offline relationships. Specifically, the researchers found that when online friendships lasted for more than a year, their quality became comparable to offline friendships. Yet this study was cross-sectional, and the effect over time is critical to understand the longer-term effects of online relationships.

Using a large sample of Dutch youth aged 12 to 17, Valkenburg and Peter (2007[26]) investigated whether online communication stimulated or reduced closeness between friends, and whether intimate disclosure of personal information online affected their closeness to online ties. The authors found that only 30% of the adolescents perceived online communication as a more effective means for disclosing personal information. Furthermore, online communication with strangers met online proved to have no effect on the adolescents' perceived closeness to friends, while communicating with existing friends increased closeness to friends (Valkenburg and Peter, 2007[26]).

One possible explanation for the perception of a smaller degree of relational closeness with online ties is provided by an Israeli study with a large representative sample of adolescents. The perception of less relational closeness was found to result from length of the relationship. Since online ties have generally been acquainted for less time than face-to-face ties, they are still in the phase of relationship development and are therefore perceived to be of lesser depth and breadth (Mesch and Talmud, 2006[4]). Yet as time goes by, and as the topics of conversation expand from a small number of shared interests to a wider range, the perceived connection is assumed to grow closer.

Recent studies

In the early days of online communication, the main distinction was between online and offline ties. The definition of these ties was based on the origin of the relationship that often shaped the communication channels and content. With the increase in Internet access, and the proliferation of online communication platforms and SNSs (e.g. instant messenger, WhatsApp, Facebook etc.), the distinction has become more difficult to make. Today, it is more reasonable to understand the social world of young people and adults as being composed of online, offline and mixed-mode friendships. Mixed-mode friendships refers to the integration of online and offline ties and their interaction in people's lives. Thus mixed-mode friendships are those that originate online and extend to offline settings (Antheunis, Valkenburg and Peter, 2012[27]).

The notion of online relationship formation requires conceptual clarification. Most research has not clearly defined what is meant by online ties. To date, research has largely been conducted to elucidate the effects of channel characteristics on interpersonal communication, emphasising the lack of social presence, lack of richness and lack of social cues in Internet communication, as well as to determine the conditions under which this communication is non-personal or becomes hyper-personal (Walther, 1996[28]).

How do online, offline and mixed-mode friendships differ? Antheunis, Valkenburg and Peter (2012[27]) conducted a study in which they compared the quality of online, offline and mixed-mode friendships, as well as the relative contribution of proximity and perceived similarity, to the quality of friendship. The study was based on data gathered from a large

sample of members of a Dutch social networking site (n=2188). An important finding was that there were differences in quality between online and offline friendships and these remained significant over time. However, these quality differences between mixed-mode and offline friendships disappeared over time. As has been mentioned in the literature, moving from online to offline communication channels such as face-to-face and phone with someone who one met online is an important step towards increasing the closeness in relationships (Mesch and Talmud, 2006[4]).

The authors also addressed the question of the extent to which residential proximity and perceived similarity differ among online, mixed-mode and offline friendships. Significant differences were found in the degree of proximity between the types of friendship, the actual distance between offline friends being the lowest, followed by mixed-mode and online friends (Antheunis, Valkenburg and Peter, 2012[27]). Concerning perceived similarity between online, mixed-mode and offline friendships, there is a significant difference between online and mixed-mode friendships, and between online and offline friendships. Perceived similarity was the highest in mixed-mode friendships and offline friendships, and lowest in online friendships (Antheunis, Valkenburg and Peter, 2012[27]).

Consistent with earlier studies, the researchers found that respondents perceived offline friendships as being of higher quality than online friendships. However, the study found that mixed-mode friendships, which, as mentioned previously, originate online but then migrate to offline communication modalities (i.e. telephone, face-to-face communication), were rated similar in quality to offline friendships. Thus, it seems not to be important whether a friendship forms online or offline, but rather whether these newly formed friendships also migrate to cue-richer communication modalities, such as telephone and face-to-face contact friendships (Antheunis, Valkenburg and Peter, 2012[27]).

Consistent with the findings of earlier studies (e.g. Mesch and Talmud (2006[4])), this study found that the quality of all three types of friendship improved as the friendship developed over time. Nevertheless, the quality of online friendships remained significantly lower than that of offline friendships and mixed relationships even after two years of follow-up.

In terms of proximity, the study found that offline friends lived closer to each other than mixed-mode and online friends. This suggests that in online and mixed-mode friendships, actual geographic proximity is less important to becoming friends. Furthermore, this finding indicates that online relationships overcome the barriers imposed by geographical constraints.

In terms of similarity, the study found that the level of perceived similarity was lower in online friendships compared to mixed-mode and offline friendships. However, the effect of similarity on the quality of friendship is higher for online friendships than for mixed-mode and offline friendships. These results indicate that although the level of similarity is low in online friendships, similarity is a more important determinant of friendship quality in online friendships than in the other two friendship categories (Antheunis, Valkenburg and Peter, 2012[27]).

Conclusion and future research

This chapter discussed how online spaces are used in the context of relationship formation and the creation of friendship ties by means of ICT. It emphasised the role of online communication in providing an alternative and complementary space for relationship formation, given the specific restrictions that youth face. These are mainly geographic, constituting a contextual barrier that motivates some adolescents to turn to the Internet to

seek others who share their specific interests or differ in their racial/ethnic background and social characteristics. Beyond structural constraints, it found that individuals with certain personality characteristics, including introversion, self-concept and attachment style, were more drawn to forming relationships online.

Heterogeneity in adolescents' social networks, occurring more often when the origin of the friendship is online, has developmental implications that require further investigation. For example, Stanton-Salazar and Urso-Spina (2005[29]) found that non-romantic, cross-gender online relationships between adolescents proved an important source of social support. They afforded emotional support, particularly for males. If the Internet reduces friendship gender segregation for young adolescents, this may have an impact on the process of dating and first time sexual relationships in the future. Another potential effect is in the early exposure to individuals of diverse ethnic and racial groups and of varying political views. If this is confirmed in future research, the Internet is very likely to become a central agent of socialisation, which has to be integrated into our understanding of youth socialisation.

The division in research of the virtual from the real does not accurately capture the lived social experiences and identity negotiations of adolescents in their socialisation process or in their belonging to peer groups, nor does it encompass the complexity in which offline and online spaces are mutually embedded. Examining how these spaces are mutually embedded, and the complex nature of these relationships, will be an important area for future research in order to understand what this means for children in the 21st century.

The emergence of ICT into adolescents' identity management, personal communities and friendship formation seems to have changed the character of "private" and "public" spaces, constituted by adolescents' activities on and around the screen. Nowadays it seems that there is an online and offline integration and interpersonal relationships are constantly moving through social networks between online, offline and mixed communication depending on spatial, psychological and other constraints in everyday life. A recent study of the integration of online, mixed and offline social ties concluded that there is evidence that subjects with higher levels of online/offline integration have higher life satisfaction, greater extraversion, more positive perceptions of the Internet and less loneliness (Antheunis, Valkenburg and Peter, 2012[27]). Future research with nationally representative samples from other countries will benefit this field by allowing between-country comparisons, and to confirm if these phenomena affect children in different contexts.

Note

[1] In social network analysis, ego networks are those made up of an individual (called ego) along with all the social ties s/he has with other people (called alters). In egocentric social networks, the person of interest is referred to as the ego. The people s/he is appointing to his/her network – relatives, friends, advisors, etc. – are referred to as alters (Djomba and Zaletel-Kragelj, 2016[30]).

References

Antheunis, M., P. Valkenburg and J. Peter (2012), "The quality of online, offline, and mixed-mode friendships among users of a social networking site", *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, Vol. 6/3, http://dx.doi.org/10.5817/cp2012-3-6. [27]

Armstrong, L., J. Phillips and L. Saling (2000), "Potential determinants of heavier internet usage", *International Journal of Human-Computer Studies*, Vol. 53/4, pp. 537-550, http://dx.doi.org/10.1006/IJHC.2000.0400. [8]

Correa, T. and S. Jeong (2011), "Race and online content creation", *Information, Communication & Society*, Vol. 14/5, pp. 638-659, http://dx.doi.org/10.1080/1369118x.2010.514355. [18]

Desjarlais, M. and T. Willoughby (2010), "A longitudinal study of the relation between adolescent boys and girls' computer use with friends and friendship quality: Support for the social compensation or the rich-get-richer hypothesis?", *Computers in Human Behavior*, Vol. 26/5, pp. 896-905, http://dx.doi.org/10.1016/j.chb.2010.02.004. [6]

Djomba, J. and L. Zaletel-Kragelj (2016), "A methodological approach to the analysis of egocentric social networks in public health research: A practical example", *Slovenian Journal of Public Health*, Vol. 55/4, pp. 256-263, http://dx.doi.org/10.1515/SJPH-2016-0035. [30]

Ellison, N., C. Steinfield and C. Lampe (2007), "The benefits of Facebook "friends:" Social capital and college students' use of online social network sites", *Journal of Computer-Mediated Communication*, Vol. 12/4, pp. 1143-1168, http://dx.doi.org/10.1111/j.1083-6101.2007.00367.x. [11]

Gonzales, A. (2017), "Disadvantaged minorities' use of the Internet to expand their social networks", *Communication Research*, Vol. 44/4, pp. 467-486, http://dx.doi.org/10.1177/0093650214565925. [13]

Hampton, K., L. Sessions and E. Her (2011), "Core networks, social isolation, and new media: How internet and mobile phone use is related to network size and diversity", *Information, Communication & Society*, Vol. 14/1, pp. 130-155, http://dx.doi.org/10.1080/1369118X.2010.513417. [17]

Igarashi, T., J. Takai and T. Yoshida (2005), "Gender differences in social network development via mobile phone text messages: A longitudinal study", *Journal of Social and Personal Relationships*, Vol. 22/5, pp. 691-713, http://dx.doi.org/10.1177/0265407505056492. [23]

Khan, S. et al. (2016), "Exploring the relationship between adolescents' self-concept and their offline and online social worlds", *Computers in Human Behavior*, Vol. 55, pp. 940-945, http://dx.doi.org/10.1016/j.chb.2015.09.046. [7]

Kraut, R. et al. (2002), "Internet paradox revisited", *Journal of Social Issues*, Vol. 58/1, pp. 49-74, http://dx.doi.org/10.1111/1540-4560.00248. [5]

Livingstone, S. and M. Bovill (2001), *Children and Their Changing Media Environment: A European Comparative Study*, L. Erlbaum. [3]

Mazur, E. and L. Kozarian (2010), "Self-presentation and interaction in blogs of adolescents and young emerging adults", *Journal of Adolescent Research*, Vol. 25/1, pp. 124-144, http://dx.doi.org/10.1177/0743558409350498. [15]

Mazur, E. and L. Richards (2011), "Adolescents' and emerging adults' social networking online: Homophily or diversity?", *Journal of Applied Developmental Psychology*, Vol. 32/4, pp. 180-188, http://dx.doi.org/10.1016/j.appdev.2011.03.001. [25]

McPherson, M., L. Smith-Lovin and J. Cook (2001), "Birds of a feather: Homophily in social networks", *Annual Review of Sociology*, Vol. 27/1, pp. 415-444, http://dx.doi.org/10.1146/annurev.soc.27.1.415. [24]

Mesch, G. (2018), "Race, ethnicity and the strength of Facebook ties", *Journal of Youth Studies*, Vol. 21/5, pp. 575-589, http://dx.doi.org/10.1080/13676261.2017.1396303. [20]

Mesch, G., R. Mano and J. Tsamir (2012), "Minority status and health information search: A test of the social diversification hypothesis", *Social Science & Medicine*, Vol. 75/5, pp. 854-858, http://dx.doi.org/10.1016/J.SOCSCIMED.2012.03.024. [14]

Mesch, G. and I. Talmud (2010), *Wired Youth: The Social World of Adolescence in the Information Age*, Routledge, https://doi.org/10.4324/9780203855102. [12]

Mesch, G. and I. Talmud (2006), "The quality of online and offline relationships: The role of multiplexity and duration of social relationships", *The Information Society*, Vol. 22/3, pp. 137-148, http://dx.doi.org/10.1080/01972240600677805. [4]

Milioni, D., V. Doudaki and N. Demertzis (2014), "Youth, ethnicity, and a 'reverse digital divide'", *Convergence: The International Journal of Research into New Media Technologies*, Vol. 20/3, pp. 316-336, http://dx.doi.org/10.1177/1354856513517366. [19]

Rainie, H. and B. Wellman (2012), *Networked: The New Social Operating System*, MIT Press. [1]

Robinson, L. (2011), "Information-channel preferences and information-opportunity structures", *Information, Communication & Society*, Vol. 14/4, pp. 472-494, http://dx.doi.org/10.1080/1369118X.2011.562224. [16]

Schouten, A., P. Valkenburg and J. Peter (2007), "Precursors and underlying processes of adolescents' online self-disclosure: Developing and testing an "Internet-Attribute-Perception" model", *Media Psychology*, Vol. 10/2, pp. 292-315, http://dx.doi.org/10.1080/15213260701375686. [10]

Šmahel, D. and L. Blinka (2012), "Excessive nternet use among European children", in Livingstone, S., L. Haddon and A. Görzig (eds.), *Children, Risk and Safety on the Internet*, Policy Press, http://dx.doi.org/10.1332/policypress/9781847428837.003.0015. [21]

Stanton-Salazar, R. and S. Spina (2005), "Adolescent peer networks as a context for social and emotional support", *Youth & Society*, Vol. 36/4, pp. 379-417, http://dx.doi.org/10.1177/0044118x04267814. [29]

Valkenburg, P. and J. Peter (2007), "Online communication and adolescent well-being: Testing the stimulation versus the Displacement Hypothesis", *Journal of Computer-Mediated Communication*, Vol. 12/4, pp. 1169-1182, http://dx.doi.org/10.1111/j.1083-6101.2007.00368.x. [22]

Valkenburg, P. and J. Peter (2007), "Preadolescents' and adolescents' online communication and their closeness to friends.", *Developmental Psychology*, Vol. 43/2, pp. 267-277, http://dx.doi.org/10.1037/0012-1649.43.2.267. [26]

Van Ingen, E. and K. Wright (2016), "Predictors of mobilizing online coping versus offline coping resources after negative life events", *Computers in Human Behavior*, Vol. 59, pp. 431-439, http://dx.doi.org/10.1016/j.chb.2016.02.048. [9]

Walther, J. (1996), "Computer-mediated communication", *Communication Research*, Vol. 23/1, pp. 3-43, http://dx.doi.org/10.1177/009365096023001001. [28]

Wolak, J., K. Mitchell and D. Finkelhor (2003), "Escaping or connecting? Characteristics of youth who form close online relationships", *Journal of Adolescence*, Vol. 26/1, pp. 105-19, www.ncbi.nlm.nih.gov/pubmed/12550824. [2]

Chapter 6. Digital parenting and the datafied child

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Many parents of today are feeling increasingly concerned not only for the well-being and safety of their children, but also for their own abilities to take up the role of a "good" and "responsible" parent. Empirical research evidence is used in the chapter to illustrate how the data religion cultivated by tech industry, popular press, marketing discourses and general societal expectations of a "responsible parent" have created a norm for plugged-in parenting resulting in intimate dataveillance of children, both in online and offline contexts. Various digital parenting tools – from pregnancy apps and baby monitors to parental controls and tracking devices – and practices – such as sharenting – are used in the chapter to illustrate how the issues related to the digital rights and privacy of the child are almost entirely discarded against the overprotective and technologically moderated parenting stance leading to both commodification as well as datafication of childhood.

Introduction

Present day children are some of the first generations to grow up in the world immersed in digital technologies. The majority of children in Western urban societies are growing up in media-rich households (Livingstone, 2002[1]), in which they are surrounded by a wide range of digital tools and devices. In fact, digital tools and online environments have become such an intrinsic part of contemporary life that these technologies have not only started to shape the ways in which families operate on a day-to-day basis, but also to affect the dynamics of family life (cf. Carvalho, Francisco and Relvas (2015[2]) for literature review).

Parents are often concerned about their children's use of digital devices and are thus increasingly trying to manage and mediate their children's relationships and engagement with various digital technologies. At the same time, parents also tend to have many questions and concerns related to child-rearing as well as their own roles and duties as parents. Thus, scholars (cf. Dworkin, Connell and Doty (2013[3]) and Plantin and Daneback (2009[4]) for a comprehensive review) have noted that more and more parents are increasingly turning to different websites, online groups or apps when searching for information, insightful advice or practical help that could guide them in their parenting roles.

In order to refer to these different relationships that parents have with new digital technologies in child-rearing contexts, in recent years the ambiguous concept of "digital parenting" has come into use (Mascheroni, Ponte and Jorge, 2018[5]). On the one hand, the concept is meant to cover the varied practices parents adopt in order to manage and mediate their children's engagement and relationships with digital media, such as restrictive and enabling mediation (Livingstone and Byrne, 2018[6]). On the other hand, digital parenting also refers to the ways in which "parents themselves incorporate digital media in their daily activities and parenting practices, and, in so doing, develop emergent forms of parenting" (Mascheroni, Ponte and Jorge, 2018, p. 9[5]). In fact, as argued by Sun Sun Lim (2018, p. 31[7]), in the context of Western urban societies, "the digitally connected family inhabits an environment that is powered and enveloped by always on and always-on-hand mobile media" leading to "transcendent parenting" (i.e. a practice "wherein parents must transcend every media consumption environment their children enter, their children's offline and online social interaction milieu and 'timeless time' as experienced in the apparent ceaselessness of parenting duties" (Lim, 2018, p. 32[7])). Parents living in a technology-saturated society have thus needed to get accustomed to parenting 24/7, as various parenting duties can interrupt their other social roles, obligations and duties at any time or place.

While parents have always worried and watched over their children, during the last decade various labels, such as "helicopters," '"hovercrafts," "hummingbirds," "stealth fighters" or "black hawks" (LeMoyne and Buchanan, 2011[8]), have been coined both by the popular press and academics to refer to overprotective parents who tend to micro-manage their children's lives. A decade ago, scholars (e.g. Nelson (2008[9]) and Malone (2007[10])) were already reporting "a new stance of anxiety" (Nelson, 2008, p. 516[9]), emerging especially amongst middle-class parents who tend to constantly worry about the safety and development of their children. Due to this parental anxiety, which is believed to be deeply rooted in our present day risk society (Ericson and Haggerty, 2006[11]) (i.e. "a society increasingly preoccupied with the future [and also with safety], which generates the notion of risk" (Giddens and Pierson, 1998[12])), many parents have started to take additional steps to monitor their children more closely than ever before. Considering that parents often also tend to view children as at risk and thus in need of protection, it is only understandable that

parents try to do everything in their power "to protect the innocence of childhood, to shield children and the very essence of childhood from the potential evils of the world," (Malone, 2007, p. 515[10]).

Many parents are therefore feeling increasingly concerned not only for the well-being and safety of their children, but also for their own abilities to take up the role of a "good" and "responsible" parent. In fact, as argued by Howell (2010[13]), the culturally accepted level of care, as interpreted by many of today's parents, would mean keeping one's children under close surveillance at all times so as to be able to control and take care of them at the same time (Howell, 2010[13]). In contrast to previous decades, however, this continuous "parental gaze has become technologized" (Howell, 2010, p. 1[13]). In fact, Leaver (2017, p. 8[14]) has noted that we have reached a point in society where "unplugged parenting is likely to be increasingly positioned as both irresponsible and aberrant." Hence, the usage of various technological devices and apps has already started to intersect with social expectations and discourses about "good parenting" in the marketing discourse and in parents' minds.

Various technology companies and service providers have of course eagerly responded to the concerns of parents by providing a myriad of technological solutions for easing parental anxieties. Hundreds of digital devices and thousands of mobile apps have been brought to the market with an aim to enable parents to create "virtual togetherness with their children over distance" (Gabriels, 2016, p. 176[15]). In fact, Willson (2018, p. 1[16]) argues that digital devices have become so entangled with digital parenting practices of present day parents that the world where "the contemporary child is conceived and raised is one that is increasingly monitored, analysed and manipulated through technological processes".

At the same time, it is important to note, that some scholars (e.g. Bonafide, Jamison and Foglia (2017[17]), Simpson (2014[18]) and Nelson (2008[9])) are becoming increasingly concerned that this (over)reliance on various digital technologies and parenting apps has not helped to ease parental concerns, but rather has intensified them. Furthermore, researchers claim that the contemporary trend of "intensive parenting" (i.e. when a parent "actively cultivates their child, acquires sophisticated knowledge of best child rearing practices, and utilizes this knowledge to closely monitor the child's development and daily activities" (Bernstein and Triger, 2010, p. 1225[19])), has also led to the emergence of the "datafied child" (Lupton and Williamson, 2017, p. 783[20]). This is because substantial amounts of information are being collected about children's lives posing risks to their privacy and abilities to consent.

The present chapter will provide a short overview of the empirical research evidence and scholarly discussions about the different digital parenting practices that have been taken up by today's parents, all of which have led to the fact that present day childhood has become "a critical site of datafication and dataveillance" (Mascheroni, 2018, p. 1[21]). The aim is to illustrate how the data religion cultivated by service providers and enthusiastically adopted by parents has led to the (over)reliance on digital technologies, platforms and apps.

First, the chapter will give an overview of digital parenting practices and, in particular, the usage of fertility and pregnancy apps through which parents start to create "digital shadows" for their unborn child (Leaver, 2017, p. 150[14]). After talking about babyveillance (Barassi, 2017[22]) (i.e. the use of various mobile applications and baby monitors either to ease parental anxieties or to enable parents to conform to the so-called "best practices of parenting" initiated by the social and systemic pressures), the chapter will illustrate how the usage of tracking and monitoring devices and apps by parents has led to "intimate dataveillance" of children both in online and offline contexts. In the final part of

the chapter, the example of sharenting (i.e. the parental practice of sharing information and photos about one's children on social media) will be used to suggest that such digital parenting practices may jeopardise both children's rights and privacy. Furthermore, it can also lead to negative outcomes affecting both the parent-child relationship as well as the well-being of the child.

Creating digital data-shadows for the unborn child

Since the early days of the Internet, pregnant women have turned to online discussion forums and websites (Lupton, Pedersen and Thomas, 2016[23]; Chen, Aram and Tannenbaum, 2014[24]) or 'mommy blogs' (Orton-Johnson, 2017[25]; Morrison, 2011[26]) to find emotional support and information about pregnancy and child rearing. In fact, the findings of one study (Lagan, Sinclair and George Kernohan, 2010[27]), which had participants from 24 different countries, suggest that 97% of pregnant women (n=613), use the Internet to search for information about pregnancy, for pregnancy-related social networking, for support or for e-commerce. In the majority of cases (94%), women start using the Internet to supplement information already provided by health professionals and many (48.6%) report dissatisfaction with the information provided by their doctors and midwives or feel that there is not enough time to ask questions from their health professionals (46.5%). Men also have been found to use the Internet, and social media in particular, both for practicing "caring fatherhood" (i.e. communicating with other fathers for encouragement, confirmation and advice (Eriksson and Salzmann-Erikson, 2012[28])) as well as to "learn how to be a good father" (Ammari and Schoenebeck, 2015[29]).

In more recent years, the mediation of the unborn child in a technology-saturated society has reached a new dimension (Thomas and Lupton, 2015[30]). Fertility tracking apps aimed at women who either want to conceive or to avoid conceiving (Gambier-Ross, McLernon and Morgan, 2018[31]), and pregnancy apps which enable pregnant women to track their pregnancies and to access pregnancy-related information have become immensely popular both amongst first time mothers (Lee and Moon, 2016[32]) (cf. Hughson et al. (2018[33]) for literature review on the topic) and fathers-to-be (Thomas, Lupton and Pedersen, 2017[34]). In fact, this niche of the "quantified self" movement has become so popular all around the world, that Hughson and colleagues (2018[33]) even claim, "most pregnant women in high-income countries [are] now using them". For example, already in 2015, 7% of more than 90 000 apps in Apple iTunes were focused on women's health and pregnancy (Aitken and Lyle, 2015[35]), and the industry has been booming ever since. At the same time, empirical studies (cf. Hughson et al. (2018[33]) for overview) reveal that already marginalised groups (e.g. women with lower income, ethnic or racial minorities, other hard to reach populations), as well as groups that have lower English language proficiency and digital- or health literacy, are still caught up in the "vicious cycle of digital exclusion" (Baum, Newman and Biedrzycki, 2014, p. 12[36]).

However, such technologies are starting to redefine their understandings of parenthood, health and identity (Barassi, 2017[22]). Pregnancy apps targeting fathers have also been found to serve as "pedagogical agents" (Thomas, Lupton and Pedersen, 2017, p. 762[34]), which aim to provide advice and information on how to behave as partners of pregnant women and fathers-to-be (e.g. how to prepare a nursery or build furniture for the baby), as apps often portray parenthood as a learned practice. Analysis of Thomas, Lupton and Pedersen (2017[34]), however, indicates that strong ambiguities and conflicts exist in the apps in the portrayal of expectant fatherhood. On the one hand, such apps are often based on neoliberal "figurations of middle-class responsiblilised fatherhood" (2017, p. 767[34]),

that at times can be viewed as progressive and innovative. On the other hand, these apps oftentimes still reinforce heteronormative assumptions of fatherhood, and reproduce stereotypical gender roles. For example, foetal size is sometimes compared to the size of beer bottles or footballs (2017[34]) or using metaphors of hiking and camping to compare pregnancy as a journey through the woods (for example, the Daddy Up App).

Although the discourses of ideal parenthood that are constructed in these apps "rest on middle-class neoliberal assumptions about the individual's capacity and responsibility of educating themselves" (Thomas, Lupton and Pedersen, 2017, p. 766[34]), content analysis of pregnancy apps conducted by Womack, Anderson and Ledford (2018, p. 7[37]), indicated that the recommendations apps provide are often conflicting and given without any credible source of evidence. Thus, although these apps are often viewed as indicators of both competent and successful mothering (Thornham, 2019, p. 181[38]), the health-related decisions mothers are to make based on these apps often reveal conflicting recommendations regarding issues such as consuming alcohol, eating fish or cheese, taking medicine, dyeing one's hair or planning a scheme for immunisation (Womack, Anderson and Ledford, 2018[37]). Thus, the information which might start to influence health and well-being of both the mother and her child could be unreliable and not medically sound. Considering that currently there is no regulatory body required to check and approve apps before they enter the market (Gambier-Ross, McLernon and Morgan, 2018[31]), such problems of reliability are unfortunately only to be expected. Furthermore, in this context it also important to note that similar lack of clarity exists also outside of the digital realm, as clinical guidelines all over the world also tend to recommend slightly different approaches and contradictory evidence on vaccination schedules (MacDougall and Halperin, 2016[39]), alcohol use during pregnancy (O'Leary et al., 2007[40]), postpartum physical activity (Evenson et al., 2014[41]) and many other health-related topics.

The popularity of such apps, however, is not only built on advice and recommendations for expecting parents who are targeted as eager "health conscious subjects" (Johnson, 2014[42]). In fact, in addition to advice and recommendations, pregnancy apps also provide women with an opportunity to track their pregnancies by inserting intimate health data and personal identifying information both about the mother and the unborn child such as diet before conception, conception date, parents' thoughts, medical history, number of kicks in the womb and potential due date (Barassi, 2017[22]). Thus, as criticised by Barassi (2017, p. 2[22]), such apps "not only exploit very personal information about users such as bodily functions, behaviours, and social relationships but also impact and influence notions of the pregnant body and the relationship between the body and the self".

In fact, Helen Thornham (2019, p. 179[38]) argues that the "datalogical construction" of pregnancy and motherhood is often "a clean and simple, 'scientific' and atomized metric", rather than a subjective experience full of different kinds of emotions, anxieties and everyday frustrations, but also joy or pain. For example, although these apps enable one to track the duration and frequency of sleep and to count intentional attempts to breastfeed, they do not enable one to measure the quality of sleep, or count all the unsuccessful attempts to breastfeed. Hence, Thornham (2019, p. 179[38]) claims that pregnancy apps do not take into account "maternal subjectivity", but rather silence the everyday mundane and personal experiences mothers have. The findings of Thornham's (2019[38]) small ethnographic study suggest that rather than easing the anxieties of expecting parents, mobile pregnancy apps can often actually increase and normalise them to an unhealthy degree.

Furthermore, as these apps collect, manage and share a lot of personal identifying information about both the parent as well as the unborn child, they pose a considerable risk

to privacy. It appears that the users often do not think about the topic of privacy and tend to brush it off as something not that relevant in comparison to the potential opportunities and new knowledge the apps are providing. Many parents simply may not be aware of the potential privacy risks associated with using such apps, as the data policies drafted by the service providers do not generally address the issue of privacy as clearly as they should, and tend to direct all the responsibilities related to privacy to the users (Bert et al., 2016[43]; Barassi, 2017[22]) (also see Chapter 10).

At the same time, it is important to acknowledge that in addition to sharing one's own medical and private health data with service providers and their potential third parties, parents are also creating and commodifying a data footprint for their unborn child. Hence, as argued by Barassi (2017, p. 2[22]), we are witnessing not only the "commodification of the lived experience of expectant parents but also the politics of exploitation of the data flows of the unborn", contributing to the emergence of the datafied child.

Easing parental anxieties through babyveillance

Parental anxieties created by the need to keep their child under loving, constant care intensify with the birth of the child. Although there are no "medical indications for monitoring healthy infants at home" (Bonafide, Jamison and Foglia, 2017, p. 2[17]), many parents have started to make use of baby monitors or smartphone apps. These can be integrated with sensors built into leg bands, diaper clips, socks or onesies not just to monitor the baby's health (e.g. checking heartrate, skin temperature, oxygen concentration; generating alarms for apnoea, tachycardia, bradycardia and/or oxygen desaturation), but also to alert parents in case the baby has rolled over, woken up or just peed in their diaper. In short, present day parents have a myriad of different technological options to choose from – some of which transmit both sound and light, some transmit videos, some detect movement and some even can be used as walkie-talkies.

The findings of a qualitative study by Margaret Nelson (2010[44]) carried out among 96 families across the United States suggest that there are quite sharp class differences in the way parents explain and justify their use of baby monitors. Her research indicates that while professional middle-class parents (i.e. people with graduate degrees) are foremost motivated to purchase these products as these enable them to establish desired closeness and attentiveness with their children, helping them to obtain better control over the child, working-class (i.e. no college degrees) and middle-class parents (i.e. people who have attended college) value baby monitors as they help to ensure safety (Nelson, 2010[44]). However, similar to pregnancy apps, rather than reassuring parents and easing their anxieties, "these experiences may generate anxiety and a false assumption that their infant is at risk of dying" (Bonafide, Jamison and Foglia, 2017, p. 3[17]). Furthermore, as baby monitors are sold as consumer rather than medical devices, none of the service providers are actually required to carry out observational studies or randomised trials to find scientific evidence for backing up their claims (King, 2014[45]), leaving parents with information that is not medically sound.

In spite of the fact that there is a shortage of publicly available evidence supporting the safety, accuracy and effectiveness of such baby apps and monitors, this market has been expanding in the last few years (Bonafide, Jamison and Foglia, 2017[17]). In fact, market-research firm Technavio has projected that the global market of baby monitors will expand from 561 million in sales up to nearly 943 million in the next four years (Jargon, 2019[46]). Much of this success has probably also been built upon the aggressive marketing jargon the service providers use which is believed to "stimulate unnecessary fear,

uncertainty, and self-doubt in parents about their abilities to keep their infants safe" (Bonafide, Jamison and Foglia, 2017, p. 1[17]). The findings of a content analysis of more than 1 000 consumer reviews of baby monitors in Epinions.com suggests that when using these devices, parents encourage the usage of such consumer goods but also "participate in the "selling" of anxiety and of attitudes toward the appropriateness of careful monitoring — or surveillance — of children" (Nelson, 2008, p. 519[9]). In fact, Nelson's (2008, p. 533[9]) analysis suggests that parents using baby monitors seem to believe that "they have both a 'right' and a moral obligation to know what is going on with their own child". In short, anxious parents do not view parental anxieties or the spread of surveillance as a problem, but rather embrace these as widespread and normalised parts of the digitalised society and present day parenting practice.

Intimate dataveillance: The use of tracking apps and devices

The above sections illustrate that present day parents have adopted a "philosophy of protectiveness" (Simpson, 2014, p. 275[18]), which is so deep-rooted in their parenting practices that these parental concerns and anxieties do not ease up even when children are growing older. Rather, it is the other way round. As there are so many new risks children may face in their online and offline encounters, parents have increasingly started to make use of various technological devices, mobile applications or parental controls (e.g. content filtering software, Internet blockers, add-on monitoring software) for monitoring children's whereabouts both in the online and offline worlds.

Regardless of the fact that the effectiveness of parental controls is not clearly demonstrated (Zaman and Nouwen, 2016[47]), recent empirical studies suggest that the popularity and usage of parental controls has increased in the last few years. For example, in comparison to 2010 when only 16% of Estonian parents engaged in technical mediation of their children's Internet use, in 2018 technical mediation was used by 37% of Estonian parents (N=1020 parents of 9-17 year-olds) participating in the EU Kids Online survey (Sukk and Soo, 2018[48]). Similarly, the usage of parental controls has been reported as growing in other countries, such as in the United Kingdom (Ofcom, 2017[49]).

There is a wide variety of parental controls on the market, which allow for monitoring, but also provide different safety and restrictive measures. For example, an overview provided by Zaman and Nouwen (2016[47]) suggests that some parental controls enable parents to set place, time and content restrictions. Parents can therefore have control over where, how long and what kind of content their child can access online (e.g. no screen time one hour before bedtime; no Internet access in the bedroom or in school, etc.), or with whom they can interact online (e.g. limiting the list of friends with whom their child can interact online). Some other parental controls may help to set limits on various online activities, such as entertainment, social media and online games (e.g. disabling features for sharing content). Findings from a recent EU Kids Online survey carried out in Estonia, for instance, reveal that 21% of parents made use of some monitoring programmes to monitor what kind of websites and platforms their children were using. Alternatively, parents used some apps or platforms that enabled them either to block some online content or limit the time their child spent online (Sukk and Soo, 2018[48]).

In addition to online surveillance that parents may exercise through various technological means, parents would also like to protect and to keep their children safe in the offline world. In fact, similar to the use of pregnancy apps or baby monitors, the use of offline tracking apps and devices has started to "be defined as being consistent with the actions of a good parent" (Simpson, 2014, p. 279[18]). In fact, these tracking devices and apps are advertised

as being able to "empower users, improve efficiency, and make the world a better — and in this case, safer — place" (Hasinoff, 2017, p. 497[50]) by helping them make the right kind of consumption choices.

In comparison to children of earlier generations who were used to playing outside with their friends, walked alone to school or biked around the neighbourhood while being completely out of reach of their parents, today's children are rarely able to enjoy such freedoms and independence. Although the mobile phone has been referred to as "the world's longest umbilical cord" (Shellenbarger, 2005[51]), since the beginning of the 20th century, the newest technological advancements have enabled parents to "exercise control from a distance, without interaction" (Gabriels, 2016, p. 176[15]). Most of these devices offer real-life tracking opportunities, which enable the parents to pinpoint the exact location and whereabouts of the child; some even provide the child's transit speed. Many devices also come with an SOS or panic button, so that when in trouble, the child can immediately contact their parents through either a two-way voice communication or a video-option.

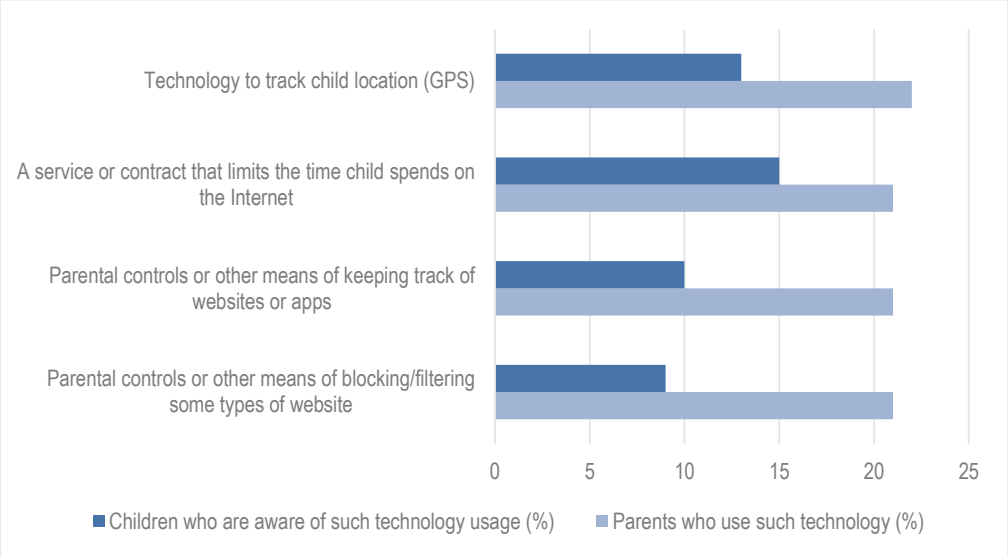
The most recent technological advancements, however, have become so discreet that their usage might go totally unnoticed by the child. For example, 2019 Edison Award winner in the area of "personal protection system", B'zT, comes in the form of a washable tracker patch and chipset that can be re-embedded in clothing, like a T-shirt, with an alarm that goes off every time the child wanders away to notify the parents. Some tracking devices even provide a geo-fencing option, which enables the parents to mark concrete locations on the map and turn them into so-called safety-zones (i.e. specific locations where the child is allowed to tread), and in case the child has wandered outside of the safety zone, the parents will be immediately notified. Some apps also alert parents when the child is visiting some new place or when they are arriving home too late. More expensive ones, such as the Amber Alert GPS Locator, even tap into the United States National Sex Offender Database and alert the parents when the child is within 500 feet of a registered sex offender's home address.

All of the above examples indicate that parents can choose from a wide variety of "other-tracking apps" (Gabriels, 2016[15]) which enable tracking and monitoring of children via location technology, without the consent and knowledge of the child. The EU Kids Online survey findings from Estonia also suggest that children (9-17 year-olds) are often unaware of the intimate dataveillance practices their parents are undertaking - although 22% of Estonian parents reported making use of some tracking technologies to monitor their child, only 13% of the children from the same families were aware of such surveillance (Sukk and Soo, 2018, p. 58[48]) (see Figure 6.1).

These findings indicate that parents not only tend to avoid talking about this topic but also seem not to consider such technical mediation and intimate dataveillance practices from a child rights and privacy perspective. Thus, regardless of the potentially good intentions these technological tools offer, it is still important to consider potential repercussions, such as diminishing trust in the parent-child relationship.

Trust in the parent-child relationship can also be broken due to parental oversharing of private information related to their families, of their children in particular. Thus, the following section will give an overview of a practice referred to as sharenting through which parents are creating digital footprints for their children.

Figure 6.1. Children's awareness of technical mediation



Note: Estonian children's (%) awareness of technical mediation, (N=1020).
Source: Sukk and Soo (2018[48])

Sharenting: Creating digital footprints for the child

Many scholars (Clark et al., 2015[52]; Blum-Ross and Livingstone, 2017[53]; Lipu and Siibak, 2019[54]) have noted that sharing the joys and challenges of parenthood and documenting children's lives publicly has become a norm in the social media era. In fact, as argued by Blum-Ross and Livingstone (2017[53]) present day parents are actually encouraged to share images and stories of their own experiences as parents. In fact, numerous recent empirical studies (Lipu and Siibak, 2019[54]; Wagner and Gasche, 2018[55]; Muge Marasli et al., 2016[56]) indicate that a significant number of parents engage in sharenting, that is, sharing information and photos of their children on social media, without considering issues related to the privacy of their children.

Previous research has identified several underlying motives for sharenting. Recent EU Kids Online survey findings from Estonia suggest that in the majority of cases, parents engage in sharenting to communicate with their family and friends (Sukk and Soo, 2018[48]) (see Table 6.1). As also suggested by Duggan and colleagues (2015[57]), parents tend to justify their sharenting with a wish to involve their family members and close friends in the growing up of their children, and thus social media platforms have become "mediums for pictorially sharing family news" (Lazard et al., 2019, p. 7[58]). However, as claimed by Ouvrein and Verswijvel (2019, p. 8[59]), sharenting can also be seen as "a form of indirect self-presentation" as parents often aim to demonstrate their parental competences through online content creation.

Parents also engage in sharenting in order to be able to collect precious memories (Blum-Ross and Livingstone, 2017[53]), receive social support (Duggan et al., 2015[57]), or both seek and share advice about the parenting challenges they face (Clark et al., 2015[52]; Archer and Kao, 2018[60]). In fact, as suggested by Lazard and colleagues (2019[58]), sharenting enables mothers to portray "good mothering" identities and thereby to ease a bit the social expectations placed on mothers while raising children.

Table 6.1. Estonian parents' sharenting practices

	% of the parents	N
I did it to keep in touch with family and friends	63	426
My child asked me to post the photos/videos online	5	34
My child asked me to remove something I posted about them online	4	29
I regretted something I shared about my child/children online	1	10
I asked my child if it was OK in advance	38	257
I never ask my child in advance if it is ok to post photos or videos of him or her	8	51
I didn't show my child's face clearly in photos	5	34
I don't see anything much to worry about when sharing the photos of my child online	10	70
None of these	12	83
I don't know	3	22
Prefer not to say	1	5

Note: N=672. Number of parents who have shared photos or videos of their children online. Respondents could choose multiple choices.
Source: Sukk and Soo (2018[48])

The emergence of celebrity baby accounts on Instagram, (a platform where users below the age of 13 are not allowed to have personal accounts), has also helped to normalise the practice of sharenting (Davidson-Wall, 2018[61]). Many celebrities have created personal accounts for their infants and toddlers with hundreds of thousands of followers. Some notable examples include accounts on Instagram for Boomer Phelps, son of Michael Phelps and Nicole Johnson with 707,645 followers (boomerrphelps, 2019[62]), and Alexis Olympia Ohanian, the daughter of Alexis Ohanian and Serena Williams with 561,041[1] followers (olympiaohanian, 2019[63]).

All of the above suggests that sharenting really has become a ubiquitous digital parenting practice, and as pointed out by Blum-Ross and Livingstone (2017, p. 122[53]), parents have 'yet to find an approach to representing relational identities in ways that deal fairly with both parents and their children'. For example, the findings of a recent qualitative study amongst Estonian mothers of 0-3 year-olds (N=20) suggest that mothers are feeling increasingly uneasy when posting photos of their children on social media and thus do not make sharenting decisions lightly (Siibak and Traks, 2019[64]). Similar to the findings of other researchers (e.g. Autenrieth (2018[65])), the majority of the young mothers in Siibak and Traks's (2019[64]) sample claimed that they have consciously decided not to share images of their children on social media. However, when they do share, they limit not only the number of posts but also the audience of such posts.

Furthermore, some of the young mothers in the sample had started to engage in a practice Authenrieth (2018, p. 226[65]) referred to as "anti-sharenting", that is, engaging in 'specific practices of (un)-showing' which place the focus on the photographic and spatial contexts of the image, rather than the child. For example, the findings of an EU Kids Online survey in Estonia report that 5% of respondents who had shared children's photos or videos online had engaged in anti-sharenting (see Table 6.1). Qualitative interviews with young Estonian mothers suggest that in such occasions, post-production (e.g. digital stickers of emojis) is most often used to 'replace' the facial expressions of their child in order to preserve their privacy (Siibak and Traks, 2019[64]). By doing so, on the one hand, the mothers were trying to find the right balance between the perceived societal expectation of portraying oneself as a loving mother, while on the other hand, also respecting their children's right to privacy (Siibak and Traks, 2019[64]).

Furthermore, mothers in the sample seemed to be determined to steward their children's privacy and identities online, and took up responsibilities to decide 'what is appropriate to share about their children online' as well as to ensure that their family and friends also 'respect and maintain the integrity of those rules' (Kumar and Schoenebeck, 2015[66]). Regardless, we still have to take into account the fact that when parents are afforded the right—and the responsibility—of making all those decisions on behalf of their child (Moser, Chen and Schoenebeck, 2017[67]), oversharing information may also have a darker side (cf. Lipu and Siibak (2019[54])).

One such problem is related to the embarrassment, annoyance and frustration children often feel because of sharenting (Levy, 2017[68]). For example, the findings of recent research amongst 12-16 year-olds (N=1 000) in the United Kingdom suggest that the majority of young respondents (71.3%) thought their parents did not respect their privacy online, and over one-third (39.8%) had experienced parents sharing embarrassing photos of them (Levy, 2017[68]). Teenagers emphasise that embarrassing photos, such as photos in which a child "behaves weird or looks weird" or in which the child is naked (Ouvrein et al., 2019, p. 16[59]), are especially the ones that parents should not be sharing online as such images can distort the self-image of the child. Future research needs to explore younger children's views on sharenting as well, as currently younger children's voices are still silenced from the academic debate on the topic.

In general, parents and children have very different attitudes about how often parents should ask for permission to post about their child on social media (Moser, Chen and Schoenebeck, 2017[67]; Hiniker, Schoenebeck and Kientz, 2016[69]). For example, the findings of Hiniker, Schoenebeck and Kientz (2016, p. 1385[69]) suggest that 'children were twice as likely to report that parents should not "overshare" by posting information about their children online without permission'. Similarly, interviews with pre-teens (9-13 year-olds) and their mothers in Estonia (N=14) indicate that pre-teens often feel annoyed and frustrated by their parents' sharenting choices and the fact that they are either unable to voice their opinion when those images are selected, or that their comments are often ignored by their parents (Lipu and Siibak, 2019[54]). In fact, several of the pre-teens in this study claimed that their parents were not used to asking children's permission before sharing their images on social media. Furthermore, even if pre-teens had voiced their concerns about the choice of photos, especially in those cases where parents had uploaded images that the pre-teens considered to be embarrassing or unflattering (e.g. 'ugly photos', 'where my hair is messed up') and asked the parents to remove them from their profile, these requests were oftentimes not responded to (Lipu and Siibak, 2019[54]).

In many respects, these perceptions of pre-teens are accurate. Even though some mothers expressed the need to consult with their child before uploading an image or tagging them on social media, the majority of the mothers in this sample rarely considered the child's opinion on the matter (Lipu and Siibak, 2019[54]). Most of the time these mothers justified their stance by claiming that parents have a right to decide and to control which information they share about their children on social media, especially if children are still quite young.

These findings thus suggest that there is a considerable discrepancy between the views of pre-teens and those of their mothers regarding sharenting, all of which might lead to the 'privacy boundary turbulence' (Petronio and Durham, 2015[70]), that is due to emerge when a child's intended privacy levels are inconsistent with how their parents treat their information. This inconsistency might also cause distress in a parent-child relationship.

Another potential risk to which sharenting practices might lead is referred to as digital kidnapping (Friedman, 2015[71]; Whigham, 2015[72]). In this context, digital kidnapping

refers to instances when a stranger steals a photo of a child from social media and uses it in a different context, often inventing new narratives around the persona of the child, or claiming the child as one's own. Sometimes a set of hashtags, such as #babyrp or #adoptionrp, are used together with the stolen photo to indicate that the poster is roleplaying; on other occasions, however, digital kidnapping may also lead to a real cybercrime such as identity theft of the child, or potentially lead to online grooming.

Findings of a recent qualitative study amongst the mothers of 0-3 year-olds in Estonia (N=20) reveal that digital kidnapping is a rare but nevertheless real threat that mothers have noticed while communicating on social media, and particularly on moms' groups on Facebook; some have even had their own children fall victim to it (Traks, 2019[73]). For example, one mother from the sample described how a stranger had stolen photos of her children from her blog and uploaded them on a dating website, claiming that the children could be bought as sex-slaves (Traks, 2019[73]). On other occasions, the interviewed mothers reported instances when strangers had posted photos of digitally kidnapped children on different mommy groups on Facebook accompanied with a narrative which stated that the child in the photo was seriously ill and in need of expensive medical care that the parent, in this case the digital kidnapper, was unable to cover. In these occasions, the kidnappers were hoping to find sympathisers from the community with the hopes of raising money to "cure" the child (Traks, 2019[73])

Although the above examples reveal the gloomiest potential scenarios sharenting could lead to, raising the awareness of parents on the topic is crucial. Despite popular press covering the topic of digital kidnapping to some extent in recent years (cf. Friedman (2015[71]); Whigham (2015[72])), scientific research on the topic is slowly starting to emerge.

Conclusion

In the technology-saturated society of today, where almost all aspects of life are transformed into quantifiable data, it is becoming increasingly important for social scientists to scrutinise how the processes of datafication affect our everyday lives such as our understandings of society, human behaviour, conduct and social interaction. It is also important to acknowledge that this era of datafication has an important effect not only on adults, but also on children. Furthermore, present day children's personal information is being collected, monitored, stored and shared in such a myriad of ways, and in many respects, as argued by Barassi (2018, p. 169[74]), "parents' digital practices are directly related to this transformation". Alternatively, as ironically noted by others, in an era of "transcendent parenting" (Lim, 2018[75]), spying has become "an enhanced parenting tool" (Marx and Steeves, 2010, p. 205[76]).

This overprotective and technologically moderated parenting stance has been largely caused by the competing demands of social-, work-, and family life and the desire to be a good parent, or to do parenting right. More and more parents have fallen victim to the moral panic initiated by the parents and voiced by public media, anxiety-heavy marketing jargon and mom-shaming discourses on social media, all of which have made a mark on the societal expectations about "good parenting". In fact, similar to Tiidenberg and Baym (2017[77]), who argue that when performing pregnancy (i.e. sharing content) on Instagram, pregnant women are expected to "learn it, buy it, and work it".

Present day parents in general are increasingly disciplined into a specific plugged-in parenting routine. This chapter has explained how expecting parents are first turning to social media and various websites to learn the tricks about responsible parenting, and later

feel that various mobile apps and digital devices need to be bought and used, so as not to appear as an irresponsible and careless parent.

Caring for children's well-being and safety has always been one of the cornerstones of parenting philosophies. However, it seems that it is becoming increasingly important to remind today's parents that "parenting issues will not be solved just because 'there is an app for that'" (Zaman and Nouwen, 2016, p. 6[47]). Rather, it is important to acknowledge that various digital parenting tools – from pregnancy apps and baby monitors to parental controls and tracking devices – tend to one-sidedly focus on the protective and preventative features (Zaman and Nouwen, 2016[47]) while almost entirely discarding the issues related to the digital rights of the child.

Various policy documents (e.g. Recommendation CM/REC(2018)7 of the Committee of Ministers to Member States (Council of Europe, 2018[78])) emphasise the role of parents and caregivers in protecting children's privacy, personal data and online reputation and the need to respect the confidentiality of their correspondence. However, parental awareness and public opinion on the topic needs to become more nuanced.

Furthermore, there is not only a need to empirically study and "document the diverse surveillance imaginaries and practices that are enacted in different families" (Mascheroni, 2018, p. 10[21]), but also a growing imperative for a child-oriented approach to dataveillance (Lupton and Williamson, 2017[20]). As there are currently no empirical studies on children's views and experiences related to intimate surveillance exercised by parents, future research should aim to fill this gap in the literature. This could provide important insight for parents and policy makers alike. In fact, there is not only a growing need both on the national and international policy level for initiatives that would help to foster the accountability and responsibility of industry players, there is also a strong need for an ethics-based conceptual approach for the tech industry that has helped to commodify parental anxieties.

Note

[1] Follower counts as of May 2019.

References

Aitken, M. and J. Lyle (2015), *Patient Adoption of mHealth: Use, Evidence and Remaining Barriers to Mainstream Acceptance*, IMS Institute for Healthcare Informatics, www.iqvia.com/-/media/iqvia/pdfs/institute-reports/patient-adoption-of-mhealth.pdf. [35]

Ammari, T. and S. Schoenebeck (2015), *Understanding and Supporting Fathers and Fatherhood on Social Media Sites*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/2702123.2702205. [29]

Archer, C. and K. Kao (2018), "Mother, baby and Facebook makes three: Does social media provide social support for new mothers?", *Media International Australia*, Vol. 168/1, pp. 122-139, http://dx.doi.org/10.1177/1329878X18783016. [60]

Autenrieth, U. (2018), "Family photography in a networked age: Antisharing as a reaction to risk assessment and behaviour adaption", in G. Mascheroni, C. Ponte, A. (ed.), *Digital Parenting. The Challenges for Families in the Digital Age*, Nordicom, Göteborg. [65]

Barassi, V. (2018), "The child as datafied citizen: Critical questions on data justice in family life", in Giovanna Mascheroni, C. (ed.), *Digital Parenting: The Challenges for Families in the Digital Age*, The International Clearinghouse on Children, Youth and Media, https://norden.diva-portal.org/smash/get/diva2:1265024/FULLTEXT01.pdf#page=21. [74]

Barassi, V. (2017), "BabyVeillance? Expecting parents, online surveillance and the cultural specificity of pregnancy apps", *Social Media + Society*, Vol. 3/2, p. 205630511770718, http://dx.doi.org/10.1177/2056305117707188. [22]

Baum, F., L. Newman and K. Biedrzycki (2014), "Vicious cycles: Digital technologies and determinants of health in Australia", *Health Promotion International*, Vol. 29/2, pp. 349-360, http://dx.doi.org/10.1093/heapro/das062. [36]

Bernstein, G. and Z. Triger (2010), "Over-parenting", *U.C. Davis Law Review*, Vol. 44, https://heinonline.org/HOL/Page?handle=hein.journals/davlr44&id=1231&div=&collection=. [19]

Bert, F. et al. (2016), "There comes a baby! What should I do? Smartphones' pregnancy-related applications: A web-based overview", *Health Informatics Journal*, Vol. 22/3, pp. 608-617, http://dx.doi.org/10.1177/1460458215574120. [43]

Blum-Ross, A. and S. Livingstone (2017), ""Sharenting," parent blogging, and the boundaries of the digital self", *Popular Communication*, Vol. 15/2, pp. 110-125, http://dx.doi.org/10.1080/15405702.2016.1223300. [53]

Bonafide, C., D. Jamison and E. Foglia (2017), "The emerging market of smartphone-integrated infant physiologic monitors", *JAMA*, Vol. 317/4, p. 353, http://dx.doi.org/10.1001/jama.2016.19137. [17]

boomerrphelps (2019), *boomer phelps (@boomerrphelps)*, Instragram, www.instagram.com/boomerrphelps/?hl=en. [62]

Carvalho, J., R. Francisco and A. Relvas (2015), "Family functioning and information and communication technologies: How do they relate? A literature review", *Computers in Human Behavior*, Vol. 45, pp. 99-108, http://dx.doi.org/10.1016/j.chb.2014.11.037. [2]

Chen, P., D. Aram and M. Tannenbaum (2014), "Forums for parents of young children: Parents' online conversations in Israel and France", *International Journal about Parents in Education*, Vol. 8/1, pp. 11-25, www.ernape.net/ejournal/index.php/IJPE/article/viewFile/287/205. [24]

Clark, S. et al. (2015), *Parents on Social Media: Likes and Dislikes of Sharenting*, C.S. Mott Children's Hospital, the University of Michigan Department of Pediatrics and Communicable Diseases, and the University of Michigan Child Health Evaluation and Research Unit, https://mottpoll.org/sites/default/files/documents/031615_sharenting_0.pdf. [52]

Council of Europe (2018), *Recommendation CM/Rec(2018)7 of the Committee of Ministers to Member States on Guidelines to Respect, Protect and Fulfil the Rights of the Child in the Digital Environment*, https://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016808b79f7. [78]

Davidson-Wall, N. (2018), *"Mum, Seriously!": Sharenting the New Social Trend With No Opt-out*, Debating Communities and Social Networks 2018 OUA Conference, http://networkconference.netstudies.org/2018OUA/wp-content/uploads/2018/04/Sharenting-the-new-social-trend-with-no-opt-out.pdf. [61]

Duggan, M. et al. (2015), *Parents and Social Media: Mothers are Especially Likely to Give and Receive Support on Social Media*, www.pewinternet.org/2015/07/16/parents-and-social-media/. [57]

Dworkin, J., J. Connell and J. Doty (2013), "A literature review of parents' online behavior", *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, Vol. 7/2, http://dx.doi.org/10.5817/cp2013-2-2. [3]

Ericson, R. and K. Haggerty (2006), *The New Politics of Surveillance and Visibility*, University of Toronto Press. [11]

Eriksson, H. and M. Salzmann-Erikson (2012), "Supporting a caring fatherhood in cyberspace - An analysis of communication about caring within an online forum for fathers", *Scandinavian Journal of Caring Sciences*, Vol. 27/1, pp. 63-69, http://dx.doi.org/10.1111/j.1471-6712.2012.01001.x. [28]

Evenson, K. et al. (2014), "Summary of international guidelines for physical activity after pregnancy.", *Obstetrical & gynecological survey*, Vol. 69/7, pp. 407-14, http://dx.doi.org/10.1097/OGX.0000000000000077. [41]

Friedman, M. (2015), *"Digital Kidnapping" is a Real (and Creepy) Threat When You Post Your Children's Photos Online*, www.cosmopolitan.com/lifestyle/a44264/digital-kidnapping/. [71]

Gabriels, K. (2016), "'I keep a close watch on this child of mine': A moral critique of other-tracking apps", *Ethics and Information Technology*, Vol. 18/3, pp. 175-184, http://dx.doi.org/10.1007/s10676-016-9405-1. [15]

Gambier-Ross, K., D. McLernon and H. Morgan (2018), "A mixed methods exploratory study of women's relationships with and uses of fertility tracking apps", *DIGITAL HEALTH*, Vol. 4, http://dx.doi.org/10.1177/2055207618785077. [31]

Giddens, A. and C. Pierson (1998), *Conversations with Anthony Giddens: Making Sense of Modernity*, Stanford University Press, Stanford. [12]

Hasinoff, A. (2017), "Where are you? Location tracking and the promise of child safety", *Television & New Media*, Vol. 18/6, pp. 496-512, http://dx.doi.org/10.1177/1527476416680450. [50]

Hiniker, A., S. Schoenebeck and J. Kientz (2016), *Not at the Dinner Table: Parents' and Children's Perspectives on Family Technology Rules*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/2818048.2819940. [69]

Howell, J. (2010), *Parents, Watching: Introducing Surveillance Into Modern American Parenting*, University of Iowa, Iowa City, Iowa, USA, http://dx.doi.org/10.17077/etd.a4wpg2r2. [13]

Hughson, J. et al. (2018), "The rise of pregnancy apps and the implications for culturally and linguistically diverse women: Narrative review", *JMIR mHealth and uHealth*, Vol. 6/11, p. e189, http://dx.doi.org/10.2196/mhealth.9119. [33]

Jargon, J. (2019), *Do the Latest Baby Monitors Ease Fears or Add Anxiety?*, The Wall Street Journal, www.wsj.com/articles/do-the-latest-baby-monitors-ease-fears-or-add-anxiety-11554811201. [46]

Johnson, S. (2014), ""Maternal devices", social media and the self-management of pregnancy, mothering and child health", *Societies*, Vol. 4/2, pp. 330-350, http://dx.doi.org/10.3390/soc4020330. [42]

King, D. (2014), "Marketing wearable home baby monitors: Real peace of mind?", *BMJ (Clinical research ed.)*, Vol. 349, p. g6639, http://dx.doi.org/10.1136/bmj.g6639. [45]

Kumar, P. and S. Schoenebeck (2015), *The Modern Day Baby Book: Enacting Good Mothering and Stewarding Privacy on Facebook*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/2675133.2675149. [66]

Lagan, B., M. Sinclair and W. George Kernohan (2010), "Internet use in pregnancy informs women's decision making: A web-based survey", *Birth*, Vol. 37/2, pp. 106-115, http://dx.doi.org/10.1111/j.1523-536X.2010.00390.x. [27]

Lazard, L. et al. (2019), "Sharenting: Pride, affect and the day-to-day politics of digital mothering", *Social and Personality Psychology Compass*, Vol. 13/4, p. e12443, http://dx.doi.org/10.1111/spc3.12443. [58]

Leaver, T. (2017), "Intimate surveillance: Normalizing parental monitoring and mediation of infants online", *Social Media + Society*, Vol. 3/2, p. 205630511770719, http://dx.doi.org/10.1177/2056305117707192. [14]

Lee, Y. and M. Moon (2016), "Utilization and content evaluation of mobile applications for pregnancy, birth, and child care", *Healthcare Informatics Research*, Vol. 22/2, p. 73, http://dx.doi.org/10.4258/hir.2016.22.2.73. [32]

LeMoyne, T. and T. Buchanan (2011), "Does "hovering" matter? Helicopter parenting adn its effect on well-being", *Sociological Spectrum*, Vol. 31/4, pp. 399-418, http://dx.doi.org/10.1080/02732173.2011.574038. [8]

Levy, E. (2017), *Parenting in the Digital Age: How Are We Doing?*, Parent Zone: Making the Internet work for Families, https://parentzone.org.uk/sites/default/files/Parenting%20in%20the%20Digital%20Age%20conference%20report.pdf. [68]

Lim, S. (2018), "Transcendent parenting in digitally connected families: When the technological meets the social", in Giovanna Mascheroni, Cristina Ponte, &. (ed.), *Digital parenting: The challenges for families in the Digital Age*, The International Clearinghouse on Children, Youth and Media, https://norden.diva-portal.org/smash/get/diva2:1265024/FULLTEXT01.pdf#page=21. [75]

Lipu, M. and A. Siibak (2019), "'Take it down!': Estonian parents' and pre-teens' opinions and experiences with sharenting", *Media International Australia*, p. 1329878X1982836, http://dx.doi.org/10.1177/1329878X19828366. [54]

Livingstone, S. (2002), *Young People and New Media: Childhood and the Changing Media Environment*, SAGE. [1]

Lupton, D., S. Pedersen and G. Thomas (2016), "Parenting and digital media: From the early web to contemporary digital society", *Sociology Compass*, Vol. 10/8, pp. 730-743, http://dx.doi.org/10.1111/soc4.12398. [23]

Lupton, D. and B. Williamson (2017), "The datafied child: The dataveillance of children and implications for their rights", *New Media & Society*, Vol. 19/5, pp. 780-794, http://dx.doi.org/10.1177/1461444816686328. [20]

MacDougall, D. and S. Halperin (2016), "Improving rates of maternal immunization: Challenges and opportunities", *Human Vaccines & Immunotherapeutics*, Vol. 12/4, pp. 857-65, http://dx.doi.org/10.1080/21645515.2015.1101524. [39]

Malone, K. (2007), "The bubble-wrap generation: Children growing up in walled gardens", *Environmental Education Research*, Vol. 13/4, pp. 513-527, http://dx.doi.org/10.1080/13504620701581612. [10]

Marx, G. and V. Steeves (2010), "From the beginning: Children as subjects and agents of surveillance", *Surveillance & Society*, Vol. 7/3/4, pp. 192-230, http://dx.doi.org/10.24908/ss.v7i3/4.4152. [76]

Mascheroni, G. (2018), "Datafied childhoods: Contextualising datafication in everyday life", *Current Sociology*, p. 001139211880753, http://dx.doi.org/10.1177/0011392118807534. [21]

Mascheroni, G. and C. Ponte (eds.) (2018), *Parenting in the digital age*, The International Clearinghouse on Children, Youth and Media, www.nordicom.gu.se/clearinghouse. [6]

Mascheroni, G. and C. Ponte (eds.) (2018), *Transcendent parenting in digitally connected families: When the technological meets the social*, The International Clearing House on Children, Youth and the Media, https://norden.diva-portal.org/smash/get/diva2:1265024/FULLTEXT01.pdf#page=21. [7]

Mascheroni, G., C. Ponte and A. Jorge (2018), *Digital Parenting: The Challenges for Families in the Digital Age*, Nordicom, University of Gothenburg, www.diva-portal.org/smash/record.jsf?pid=diva2%3A1265024&dswid=-7681. [5]

Morrison, A. (2011), ""Suffused by feeling and affect": The intimate public of personal mommy blogging", *Biography*, Vol. 34/1, pp. 37-55, www.jstor.org/stable/23541177. [26]

Moser, C., T. Chen and S. Schoenebeck (2017), *Parent's and Children's Preferences About Parents Sharing About Children on Social Media*, ACM Press, New York, New York, USA, http://dx.doi.org/10.1145/3025453.3025587. [67]

Muge Marasli et al. (2016), "Parents' shares on social networking sites About their children: Sharenting", *The Anthropologist*, Vol. 24/2, pp. 399-406, http://dx.doi.org/10.1080/09720073.2016.11892031. [56]

Nelson, M. (2010), *Parenting Out of Control: Anxious Parents in Uncertain Times*, New York University Press, New York. [44]

Nelson, M. (2008), "Watching children: Describing the use of baby monitors on Epinions.com", *Journal of Family Issues*, Vol. 29/4, pp. 516-538, http://dx.doi.org/10.1177/0192513X07310319. [9]

Ofcom (2017), *Children and Parents: Media Use and Attitudes Report*, OfCom, www.ofcom.org.uk/__data/assets/pdf_file/0020/108182/children-parents-media-use-attitudes-2017.pdf. [49]

O'Leary, C. et al. (2007), "A review of policies on alcohol use during pregnancy in Australia and other English-speaking countries, 2006", *The Medical Journal of Australia*, Vol. 186/9, pp. 466-471, http://dx.doi.org/10.5694/J.1326-5377.2007.TB00999.X. [40]

olympiaohanian (2019), *Alexis Olympia Ohanian, Jr. (@olympiaohanian)*, Instagram, www.instagram.com/olympiaohanian/?hl=en. [63]

Orton-Johnson, K. (2017), "Mummy blogs and representations of motherhood: "Bad mummies" and their readers", *Social Media + Society*, Vol. 3/2, p. 205630511770718, http://dx.doi.org/10.1177/2056305117707186. [25]

Ouvrein, G. et al. (2019), *Children and Youth Services Review*, Pergamon Press, https://econpapers.repec.org/article/eeecysrev/v_3a99_3ay_3a2019_3ai_3ac_3ap_3a319-327.htm. [59]

Petronio, S. and W. Durham (2015), "Communication privacy management theory: Significance for interpersonal communication", in Schrodt, D. (ed.), *Engaging theories of interpersonal communication: Multiple perspectives*, Sage, http://dx.doi.org/10.1002/9781118540190.wbeic132. [70]

Plantin, L. and K. Daneback (2009), "Parenthood, information and support on the internet. A literature review of research on parents and professionals online", *BMC Family Practice*, Vol. 10/1, http://dx.doi.org/10.1186/1471-2296-10-34. [4]

Shellenbarger, S. (2005), "Tucking the kids in -- in the dorm: Colleges ward off overinvolved parents", *The Wall Street Journal*, www.wsj.com/articles/SB112250452603298007. [51]

Siibak, A. and K. Traks (2019), "The dark sides of sharenting", *Catalan Journal of Communication & Cultural Studies*, Vol. 11/1, pp. 115-121, http://dx.doi.org/10.1386/cjcs.11.1.115_1. [64]

Simpson, B. (2014), "Tracking children, constructing fear: GPS and the manufacture of family safety", *Information & Communications Technology Law*, Vol. 23/3, pp. 273-285, http://dx.doi.org/10.1080/13600834.2014.970377. [18]

Sukk, M. and K. Soo (2018), *EU Kids Onlineí Eesti 2018. Aasta Uuringu Esialgsed Tulemused*, Ühiskonnateaduste instituut, Tartu, www.yti.ut.ee. [48]

Thomas, G. and D. Lupton (2015), "Threats and thrills: Pregnancy apps, risk and consumption", *Health, Risk & Society*, Vol. 17/7-8, pp. 495-509, http://dx.doi.org/10.1080/13698575.2015.1127333. [30]

Thomas, G., D. Lupton and S. Pedersen (2017), "'The appy for a happy pappy': Expectant fatherhood and pregnancy apps", *Journal of Gender Studies*, pp. 1-12, http://dx.doi.org/10.1080/09589236.2017.1301813. [34]

Thornham, H. (2019), "Algorithmic vulnerabilities and the datalogical: Early motherhood and tracking-as-care regimes", *Convergence: The International Journal of Research into New Media Technologies*, Vol. 25/2, pp. 171-185, http://dx.doi.org/10.1177/1354856519835772. [38]

Tiidenberg, K. and N. Baym (2017), "Learn it, buy it, work it: Intensive pregnancy on Instagram", *Social Media + Society*, Vol. 3/1, p. 205630511668510, http://dx.doi.org/10.1177/2056305116685108. [77]

Traks, K. (2019), *Võrguvanemlus Ja Sellega Seonduvad Riskid: Väikelaste Emade Arvamused Ja Kogemused. [Sharenting and Its Potential Risks: Reflections and Experiences of the Mothers' of Toddlers]*, University of Tartu. [73]

Wagner, A. and L. Gasche (2018), *Sharenting: Making Decisions About Other's Privacy on Social Networking Sites*, http://mkwi2018.leuphana.de/wp-content/uploads/MKWI_81.pdf. [55]

Whigham, N. (2015), *Digital Kidnapping Will Make You Think Twice About What You Post to Social Media*, News.com.ua, www.news.com.au/lifestyle/real-life/wtf/digital-kidnapping-will-make-you-think-twice-about-what-you-post-to-social-media/news-story/4dc1c9a22b657f090c25c9393f66fe88. [72]

Willson, M. (2018), "Raising the ideal child? Algorithms, quantification and prediction", *Media, Culture & Society*, p. 016344371879890, http://dx.doi.org/10.1177/0163443718798901. [16]

Womack, J., L. Anderson and C. Ledford (2018), "Presence of complex and potentially conflicting information in prenatal mobile apps", *Health Promotion Practice*, p. 152483991879621, http://dx.doi.org/10.1177/1524839918796216. [37]

Zaman, B. and M. Nouwen (2016), *Parental Controls: Advice for Parents, Researchers and Industry*, EU Kids Online, www.eukidsonline.net. [47]

Chapter 7. The social context of adolescent relationships

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Adolescence is a critical period for development. Myriad changes have profound and long-lasting implications for youths' trajectories of economic security, health and well-being in later life. Social connection during adolescence plays a foundational role in youths' successful navigation of challenges at the individual, communal and societal level. This chapter describes the importance of social connection, and the way in which global trends affect relationship behaviour and maintenance during adolescence. It discusses how 21st century social changes in the distal context – climate change, forced displacement, individualisation and new technologies – affect adolescent development, relationships and mental health. Adolescents not only directly experience the outcome of social changes, they will also be the key driver for social change, for better and for worse. This chapter aims to stimulate future research on this important area in order to better understand the effects of today's challenges for social connection in adolescence and prepare youth for the challenges yet to come.

Introduction

Adolescence is an exciting and turbulent period of life. Although there is no clear demarcation, adolescence ranges from about 10 to 24 years and is typically considered a critical period for development (Patton et al., 2018[1]; Sawyer et al., 2018[2]). Adolescents have to let go of the safety of childhood and parental protection and develop a firm hold on the responsibilities, opportunities and demands of adulthood. Profound physical and physiological maturation is coupled with cognitive, emotional, social and behavioural changes, which have important and long-lasting implications for adolescents' economic security, health and well-being (Dahl et al., 2018[3]). This multitude of changes makes adolescents particularly susceptible to the ramifications of global trends such as climate change, forced displacement, increasing individualism and new technologies. These trends can on the one hand intensify risks and vulnerabilities (e.g. exploitation, radicalisation, substance use) and on the other hand amplify opportunities and growth (e.g. learning, innovation, civic participation). Thus, given the transitional stage of adolescence, the impact of such global trends and coinciding social changes can profoundly shape their developmental trajectories.

Young people's development happens in a dynamically changing environment. Over the course of adolescence, they are increasingly involved with a variety of social contexts and institutions that have direct or indirect impacts on their development. These contexts can range from more proximal social environments in which the developing adolescent is directly involved with others (e.g. friends, romantic partners, family) to more distal social environments (e.g. communities, societies, cultural norms), all of which profoundly influence developmental processes. Bronfenbrenner (1979[4]) conceptualised these environments as nested structures, embedded within each other (See Figure 7.1). The interaction between them is complex, because individuals and environments reciprocally influence each other and can change over time, affecting the health and well-being of adolescents (Solar and Irwin, 2010[5]).

Figure 7.1. Environments influencing the development of adolescents

Social-ecological model of nested structures

Source: Adapted from Bronfenbrenner (1979[4]) and Holt-Lunstad (2018[6])

Researchers recognise that risk and protective factors at all levels of the environment may affect development (Sawyer et al., 2012[7]). Research examining these factors across contexts and time often finds diverging results depending on the population studied, the time period, the age group or the cultural context (Ungar, Ghazinour and Richter, 2013[8]). Nevertheless, a large body of evidence consistently finds that social connection—being embedded in lasting, supportive, social relationships and networks—is one of the strongest predictors of lifelong (mental) health, success in education, occupational attainment and job performance (Holt-Lunstad, 2018[6]).

Conversely, social *dis*connection (i.e. isolation, loneliness, poor quality relationships) increases vulnerability to health and socio-economic risks, which have a cumulative effect over the life course (Cacioppo and Cacioppo, 2018[9]). Given both the capacity for personal growth as well as the vulnerabilities of adolescence, one of the most important tasks for youth development is the formation of supportive social networks and the maintenance of social connections. Both of these play a foundational role in youths' successful navigation of challenges at a personal, communal and societal level.

Research examining the importance of social connection mainly focusses on proximal social contexts such as family, parents, friends and intimate relationships (Feeney and Collins, 2015[10]). Considerably less is known about how distal environments may affect social connection in adolescence. Although the nested structure of environments may suggest a hierarchical order, proximal social contexts are not necessarily more influential than distal environments (Bronfenbrenner, 1988[11]). This chapter intends to assess the potential implications of distal social change for social connection and relationships for adolescent health, well-being and life outcomes; in other words, how do global trends affect social connection in adolescence?

This chapter identifies four global trends, namely climate change, forced displacement, increasing individualism and new technologies, and analyses their potential implications for adolescents' ability to form and maintain social connections and networks. The chapter begins with a brief review of evidence highlighting the importance of social connections and relationships for health and well-being over the life course. It then describes and reviews the four global trends linked to social changes and discuss the implications of each one for adolescents' social relationships. Throughout, the chapter highlights unanswered questions that provide promising avenues for future research.

The importance and characteristics of social relationships

The current literature leaves little doubt that good relationships are good for people. This is well illustrated in a meta-analysis by Holt-Lunstad and colleagues (2010[12]), indicating that the protective effects of social supportive networks on risk for mortality are greater than the harmful effects of other well known risk factors, including smoking. Across 148 studies including more than 300 000 participants, the researchers found a 50% increased likelihood of survival for participants with stronger social relationships. This is in line with a body of literature asserting the importance of supportive networks for well-being and (mental) health (Feeney and Collins, 2015[10]). Research also shows that for most people, a lack of supportive networks is incompatible with a long, healthy and happy life. To illustrate, loneliness is associated with a 26% increase in the risk of premature mortality and reliably predicts depression and other mental health disorders (Cacioppo et al., 2015[13]).

Although researchers differ in their definitions of social relationships and connection, they recognise that relationships are inherently social. In all relationships people are part of particular social contexts, like the families, communities, and societies or cultures in which they live, and these contexts are all interdependent (Kelley and Graaf, 1997[14]). Individuals and their social contexts mutually influence each other over the short and the long run. For example, children and adolescents growing up in families that are conflictual, abusive, unsupportive or neglectful not only experience a host of adverse (mental) health outcomes over the life course, but also establish less supportive and stable relationships and networks themselves (Repetti, Taylor and Seeman, 2002[15]).

Adolescents who are unable to control their impulses and have difficulty regulating their emotions elicit more negative and harsh parenting, which diminishes adolescents' capacity to control their impulses and emotions (Willems et al., 2018[16]). Research studying the roles individuals take in their communities shows that people who report high levels of well-being (i.e. those who are satisfied with their lives and experience high levels of happiness) are popular and central in networks characterised by fun and companionship. Thus, positive and happy people are sought out by others for fun and excitement. People high in empathy (i.e. those who are attuned to others and responsive to their needs) are popular and central in social networks characterised by trust and support. Moreover, empathic individuals are sought out by others for emotional support, especially in times of stress (Morelli et al., 2017[17]).

The recognition that individuals and social contexts are interdependent, that relationships are developed between people rather than within one person, is necessary to understanding social connection in adolescence. Relational interdependence underlines that on the one hand, adolescents need the capacities to foster, engage in and sustain relationships with others. They need to be able to function in pairs and groups such as families, neighbourhoods, communities and cultures. In addition, it is crucial for them to be able to feel connected to others, ask for and provide social support or help, show empathy, communicate caring, cooperate with others, tolerate and understand that others have different perspectives from their own, and be responsive to others' needs (e.g. Cacioppo, Reis and Zautra (2011[18]) and Feeney and Collins (2015[10])). On the other hand, adolescents also need to perceive the reciprocity of that relationship demonstrating that others care about them, value them and are responsive to their needs (Reis, Lemay and Finkenauer, 2017[19]).

While adolescents' proximal social context (e.g. the family) is a key determinant of their ability to develop these social connections and relationships, external factors in the distal context that are further removed from direct influences are increasingly influential in shaping adolescents' environment (e.g. globalisation). To highlight this, Chen and colleagues (2005[20]) found changes in the adaptive value of shyness between cohorts of Chinese children studied in 1990, 1998 and 2002. While shyness was positively associated with social connection and educational achievement in 1990, the association disappeared in 1998 and was negative in 2002. In just one decade, a valued trait had become a risk factor for social disconnection and mental health problems. The authors suggest that this finding may be due to the rapid social and economic change in China, which increasingly requires "assertiveness, self-direction, and exploration in the challenging market-oriented society" (Chen et al., 2005, p. 193[20]).

This chapter explores four 21st century global trends that may have implications for social connection and relationships in adolescence: climate change, forced displacement, increasing individualism and new technologies. Each of these can pose challenges or

opportunities for young people's ability to develop and maintain stable, harmonious relationships with others in different types of social contexts. They also have implications for the extent to which young people may perceive that others care about them. The chapter examines each of these trends in turn.

Climate change

Climate change is one of the major challenges of the 21st century that poses a significant threat to people across the globe. Impacts range from declines in agriculture and decreasing biodiversity to rising sea levels and more intense heat waves. While the effects of climate change on the environment are well documented, the research on its effect on societies, and in particular social relations within these societies, is more nascent. Early research suggests that climate change shapes societies by challenging community networks and increasing levels of aggression in social relations (Burke, Davis and Diffenbaugh, 2018[21]; Watts et al., 2018[22]).

Climate change has intensified competition over resources (e.g. limited harvest and water resources, forced displacement), putting stress on social relations. Meta-analyses show that phenomena such as rising temperatures or declining rainfall are predictive of intergroup conflict and intergroup aggression (Hsiang, Burke and Miguel, 2013[23]). For example, decrease in rainfall has been connected to land annexations in Brazil (Hidalgo et al., 2010[24]), the Hindu-Muslim riots in India (Sarsons, 2015[25]), and political conflict and war (Couttenier and Soubeyran, 2014[26]). Overall, Burke, Hsiang and Miguel (2015[27]) estimate that for every 1 standard deviation increase in temperature, violence between groups is at risk to increase by 11.3%.

The link between severe weather events, such as rising temperatures and heavy rainfall, and violence is particularly high in disadvantaged neighbourhoods and communities. Therefore, those who already are at higher risk of adverse impacts related to climate change are also more likely to be affected by higher rates of violence (Mares, 2013[28]). While the proposed association between high temperatures and violence does not account for alternative explanatory factors (e.g. economic or societal), it does illustrate the link between climate change and social relations.

At the individual level too, climate change, rising temperature and climate disasters are related to higher rates of interpersonal conflict and violence. A number of studies have shown that increased levels of distress from extreme weather events put strains on social relationships and connection. For example, researchers showed an association between exposure to Hurricane Katrina and reactive aggression in adolescents (Marsee, 2008[29]). In a different sample, Harville and colleagues (2011[30]) showed higher prevalence of intimate partner violence in families exposed to Hurricane Katrina, even when controlling for diverse socio-economic influences. Similarly, Keenan and colleagues (2004[31]) who investigated family dynamics in the aftermath of Hurricane Floyd, found a stark increase in child maltreatment in families exposed to this weather disaster.

In addition, climate change has severe consequences on health and mental well-being, adding yet another stressor to the stability of relationships. It is linked to the prevalence of diseases, such as cardiovascular and respiratory problems due to air pollution and heatwaves, increased transmission of infectious diseases, malnutrition as a result of harvest failures, mental health problems and mortality resulting from extreme temperatures (Clayton et al., 2017[32]; Watts et al., 2018[22]).

In this context, unsupportive social networks are a critical risk factor during times of adversity (Holt-Lunstad, 2018[6]; Kaniasty, 2012[33]). A longitudinal study among young adolescents in the Southern United States who were exposed to Hurricane Katrina showed that lower levels of peer and family support during the hurricane were related to more depression and anxiety even years later (Banks and Weems, 2014[34]). Critically, higher levels of hurricane exposure were related to lower levels of social support from family and peers. This suggests that extreme weather events resulting from climate change may undermine individual and community resources to provide social support at times when it is most needed.

Prolonged stress, trauma, loss of houses and jobs, and economic decline in the aftermath of disaster all put severe strain on the development and maintenance of supportive relationships. This may be because anxiety, stress and uncertainty about one's future may reduce people's capacity to show empathic concern, to focus on the needs of others and to de-escalate conflict. This reduced capacity to respond to others' needs amplifies strain on social connection and hampers individuals' ability to maintain strong social networks and foster social connection (Finkenauer et al., 2017[35]). Vulnerable groups are especially likely to experience adverse effects of climate change-related stressors. Helping young people confronted with the adversity of climate change and disaster to form and maintain social connection to avoid isolation clearly is an important research and public health priority (Clayton et al., 2017[32]).

Climate change has significant consequences that can be seen from the global level (global warming, weather disasters) to the individual level (interpersonal relationships and health). While climate change poses challenges, it also offers opportunities for social relations. This is well reflected in the increasing awareness among youth of how their own future will be shaped by the consequences of climate change, leading to more civic engagement and (international) social connectedness.

In fact, the next generation is taking steps to confront political leaders with the need to act, urging them to fight climate change. For example, Swedish school student Greta Thunberg started a solo climate protest in August 2018 by striking from school, which was soon followed by school strikes by more than 20 000 children around the world. Greta stated, "Since our leaders are behaving like children, we will have to take the responsibility they should have taken long ago" (Carrington, 2018[36]).

Following Greta's example, on January 24, 2019, about 35 000 Belgian youth skipped school to demand climate action from political leaders. They marched through the streets in Brussels holding demonstration signs with messages such as "This can't wait till I'm grown-up", "The planet is hotter than my boyfriend" and "There is no planet B".

Next, this example was followed in many cities around the globe where youth marches under the flag of youth for climate. Clearly over the next fifteen years, today's youth will directly experience the outcomes of climate change, which are likely to bring with them scarring effects for other life domains such as health, well-being and social connectedness. At the same time, they will also be the key driver for identifying pathways toward a sustainable future by mobilising a broad range of agents and stakeholders around the world. Their belief in opportunities for success through socially coordinated efforts may allow them to make a change and contribute to the realisation of sustainable development goals.

Forced displacement

A historic rise in conflict and violence has led to the global crisis of forced displacement. As of the end of 2017, a record number of 68.5 million people were forcibly displaced from their homes (UNHCR, 2017[37]; WeiWei, 2017[38]). This includes 40 million internally displaced people (IDPs), 25.4 million refugees and 3.1 million asylum-seekers, 52% of whom are children below 18 years of age (UNHCR, 2017[37]). The main drivers of this are war and conflict, but displacement induced by climate change has also increased (Missirian and Schlenker, 2017[39]). Children and youth, in particular those who are unaccompanied by adults, are among the most vulnerable groups of displaced people (Fazel et al., 2012[40]). Forced displacement is a major global challenge today with severe and long-lasting impacts on individuals, societies and countries. Consequently, adolescents who are forcibly displaced face significant challenges to their ability to form social relations and build resilient social connections.

A majority of forcibly displaced youth are exposed to severe traumatic experiences prior to and during migration, with death of a loved one, physical or sexual maltreatment, fear for a significant other or one's own life and separation from family members frequently mentioned (El-Awad et al., 2017[41]; World Bank, 2017[42]). While observed prevalence rates differ considerably across studies and populations, youth who seek asylum report experiencing on average more than four traumatic events prior to or during displacement (Goosen, Stronks and Kunst, 2013[43]; Jakobsen, Demott and Heir, 2014[44]; UNHCR, 2017[37]).

This exposure to adverse life events by forcibly displaced youth is of specific concern, as a growing body of research across the behavioural and biomedical sciences demonstrates that exposure to traumatic events during childhood and adolescence affects physical and mental health across the lifespan (Ehrensaft et al., 2003[45]; Felitti et al., 1998[46]; Miller, Chen and Parker, 2011[47]). Notably, while some individuals may recover quickly and regain a level of adjustment, others may experience chronic mental and physical dysfunction and distress for years after the stressful event (Bonanno and Diminich, 2012[48]).

Children and adolescents exposed to multiple traumas have a two-to-three times higher risk of detrimental outcomes like smoking, heavy alcohol use, cancer and heart disease, a three-to-six times higher risk of sexual risk taking and mental ill-health, and a seven times higher risk for problematic drug use, interpersonal violence and suicide (Hughes et al., 2017[49]). Although future research needs to establish the direction of causation, these results suggest that exposure to multiple traumatic events represents a major risk factor for healthy development across the lifespan and, because many trauma victims will become parents themselves, this poses a considerable risk for the transfer of trauma to future generations (Hughes et al., 2017[49]; Patton et al., 2018[1]; Willems et al., 2019[50]).

In addition to traumatic experiences prior to and during migration, displaced youth may experience post-migration social stressors in their everyday lives; some are common to all youth, such as conflicts with friends and parents (El-Awad et al., 2017[41]; Stefanek et al., 2012[51]). However, others are specific to the displacement, or in some cases, the acculturation context, such as discrimination and social exclusion. Forcibly displaced persons can experience hostility in their host communities often due to a perceived increase in competition for welfare services, jobs or housing. In these cases, the relationship between host communities and refugees is further strained, which complicates the development of

strong social relations. These stressors increase the risk of depression over time, even when considering war-related risk factors and trauma (Keles et al., 2017[52]).

Friendships, feeling included and accepted, supportive networks and social connectedness in communities buffer the effects of these adverse life events and stressors experienced in the host country and host communities (de Vroome and Van Tubergen, 2010[53]; Fazel et al., 2012[40]). However, traumatised youth and their social context mutually influence each other. On the one hand, forming and maintaining healthy relationships are key for the recovery of traumatised youth, their (mental) health and their integration in a host country or community. On the other hand, traumatic experiences, mental health problems and social stressors after arriving in the host environment impede their ability to form supportive relationships (Fazel et al., 2012[40]).

More specifically, the adverse events that initiated the displacement are often only the start of a long period of uncertainty. Most forcibly displaced persons experience dangerous travels to seek asylum in an unfamiliar country, have to deal with complex legal systems upon arrival, face ongoing uncertainty regarding their residence rights and often experience discrimination. Similarly, IDPs and refugees in camp settings face heightened uncertainty and insecurity in their environment. Clearly, these uncertainties impair the ability to trust others. This volatility may prevent them from developing and maintaining relationships, both directly (e.g. moving housing, language barriers, cultural differences) and indirectly (e.g. not being able to express needs, feelings of shame and fear, which prevent others from providing adequate social support and care).

For many forcibly displaced youth, building and maintaining trusting relationships requires not only physical safety and psychological support, but also developing relational interdependence. Specifically, traumatised youth need to learn to trust others, ask for support and be able to receive support. Furthermore, those who engage with traumatised youths (e.g. professionals, teachers, office workers) need to be able to build and repair trust and be trustworthy (Finkenauer and Righetti, 2011[54]).

Increasing individualism

Increasing wealth, education, urbanisation and technology are drivers of yet another global trend: increasing individualism (Chen et al., 2005[20]; Greenfield, 2018[55]). Individualism as a value system prioritises independence and self-expression, whereas collectivism emphasises interdependence and fitting in (Santos, Varnum and Grossmann, 2017[56]; Wheeler, McGrath and Haslam, 2019[57]). Individualism promotes a view of the self as self-directed, autonomous and separate from others.

It is important to note that individualism does not indicate that people are necessarily selfish or egotistical. Rather, individualism fosters self-expression, freedom of expression and equality of opportunities (Inglehart and Welzel, 2010[58]). Furthermore, it is related to behaviour and social norms that encourage less reliance on others and greater attention to self-expression and the fulfilment of personal needs (Wheeler, McGrath and Haslam, 2019[57]). It also entails the belief that people have the right, or obligation, to seek psychological growth and personal happiness in their education, careers and relationships.

Socio-demographic changes on a distal level can produce changes at the level of proximal social environments. Santos and colleagues (2017[56]) mapped indicators of individualism in 78 countries over a period of 51 years, including behavioural indicators such as household size, living alone and divorce, as well as relationship values such as the importance of friends versus family, the value of promoting independence in children and

the preference for self-expression. Their findings showed that since 1960, individualism, as reflected in behavioural indicators and in relationship values, increased by about 12% worldwide, and was not confined to developed or rich countries. However, the authors also concluded that cultural differences remained sizeable and that these differences were primarily linked to socio-economic development.

The increase in individualism coincides with changing social perspectives of close relationships. Over time, the perception of relationships has shifted from being a social obligation to a decision based on personal fulfilment (Campbell, Wright and Flores, 2012[59]; Finkel et al., 2014[60]). The perception of marriage has changed from a formal institution promoting family and economic stability to a means of obtaining love and companionship and, more recently (in the late 20th century), to a means of pursuing personal fulfilment and self-expression (Cherlin, 2004[61]). Additionally, romantic partners more frequently require their partner to provide the emotional and physical resources to fulfil their needs for stability and companionship that communal institutions used to provide (e.g. the family, the church, the village). On the one hand, these changes provide more individual freedom in partner choice and relationship forms. On the other hand, they indicate that committed relationships can be dissolved when individuals feel that the partner does not meet their personal needs for self-expression and a new partner may better meet these needs.

Increasing mobility, changing norms about marriage and romantic relationships, high expectations, and emancipation are but some of the factors associated with an increased risk of divorce worldwide. Children of divorce or parental separation have a higher risk of divorce or separation themselves (Amato and Patterson, 2017[62]; Salvatore et al., 2018[63]). Abundant research shows that high quality parent-child relationships, high-quality parent-parent relationships, and adequate economic and social resources (e.g. financial stability, social connection) are key to the healthy development of children and adolescents. Parental divorce impairs all three of these factors, and children with divorced parents and living in single-parent families consistently show lower well-being on various indicators (Amato, 2010[64]).

Furthermore, the intergenerational transmission of divorce is partly due to the fact that children learn and inherit relational skills and capacities from their parents which they extend to their own intimate relationships (Kamp-Dush et al., 2018[65]; Willems et al., 2018[16]). Parents who divorce tend to have poorer communication skills, provide less social support to each other and engage in more destructive conflict that tends to escalate (Birditt et al., 2010[66]; Lavner and Bradbury, 2012[67]). Young adults who witness parental divorce or separation are more likely to have poorer relationship quality and more destructive conflict in their own intimate relationships (Amato and Patterson, 2017[62]), suggesting that one mechanism by which divorce may be transmitted is that children learn from their parents.

The global increase in individualism may also represent a challenge for the delicate balance adolescents have to develop between independence and interdependence. Over the course of development, adolescents gradually acquire independence and autonomy from their caregivers. An optimal balance enables adolescents to develop a healthy sense of self-reliance, agency and freedom when things go well, but the ability to call on family and friends, or their community when things go awry (Finkenauer, Engels and Meeus, 2002[68]). However, individualism may tip the balance toward prioritising independence and self-reliance over interdependence and asking for social support. Individualism may foster a belief among young people that asking for help is a sign of weakness and may be seen as

failure, even when faced with personal hardship, mental health problems or adverse circumstances (Gulliver, Griffiths and Christensen, 2010[69]; Orehek and Kruglanski, 2018[70]).

In line with this suggestion, research finds that adolescents, more than adults, prefer self-reliance when facing mental illness and problems, and are reluctant to seek help (Gulliver, Griffiths and Christensen, 2010[69]). Individualistic relational values may thereby undermine adolescents' capacity to express their needs and feelings and be receptive to social support.

Overall, increases in individualism seem associated with changes in social behaviours and relational values that influence the development of the social, cognitive and behavioural skills necessary to form and maintain lasting relationships and supportive social networks during adolescence. They may also undermine young people's motivation to remain committed to relationships, for example, during times of hardship (e.g. due to illness, loss) or when relationships require work and maintenance strategies (e.g. sacrifice, negotiation, forgiveness), insofar as they are perceived as limiting personal fulfilment. Crucially, new technologies have made it simpler and easier to access and find alternative relationship partners. The rise of new technologies that have expanded opportunities and challenges for social connection is the fourth global trend to be addressed.

New technologies

New technologies, in particular information and communication technologies and social media, are rapidly developing and increasingly ubiquitous. Generally, social network platforms such as Facebook, Instagram and Snapchat occupy 30% of people's online time (GlobalWebIndex, 2017[71]). Adolescents are at the forefront of Internet adoption with 71% of adolescents (ages 15 to 24) using the Internet versus 48% of the overall population (UNICEF, 2017[72]).

The use of new technologies and social media in adolescence is a double-edged sword for social connections and results are mixed. On the one hand, the emerging use of new technologies and social media can be beneficial, because they provide opportunities to connect with others anywhere and anytime, facilitating social connections nearby and far away, self-directed learning and active citizenship, and promoting independence (Uhls, Ellison and Subrahmanyam, 2017[73]). Research among adolescents and young adults reveals associations between time spent using social media and increased self-esteem, increased social support accessed through one's social network and safe identity exploration (Best, Manktelow and Taylor, 2014[74]). Social and mobile media make it easier for individuals to maintain a larger and more diverse social network (Hampton, Sessions and Her, 2011[75]). They may make it easier to initiate interaction and help young people seek information and support from both weak and strong social ties. New technologies can thereby provide adolescents with opportunities to develop social skills and strengthen social connections.

On the other hand, research reveals that the use of new technologies and social media is linked to negative impacts on mental health and social development, particularly in adolescence. For example, exposure to others' ideal self-representations within social media can intensify adolescents' own body image concerns and sense of social alienation (Grabe, Ward and Hyde, 2008[76]; Uhls, Ellison and Subrahmanyam, 2017[73]). Exposure to new technologies and frequent use of social media can have negative effects on closeness and feelings of social connection by decreasing the quality of conversations, perceived

understanding and empathy (Hales et al., 2018[77]). Use of social media may also decrease trust and lead to more jealousy in intimate relationships (Billedo, Kerkhof and Finkenauer, 2015[78]; Kerkhof, Finkenauer and Muusses, 2011[79]).

Research has yet to examine how the relational benefits and costs vary as a function of relationship types (e.g. friendships, intimate relationships, family relations, acquaintances), medium (social media, new technologies), context (private communication, public space) and extent of use (being off the grid, Internet addiction). Some early results indicate that Facebook deactivation in adults is associated with reduced online activity, including other social media, and increased offline activities such as watching television alone and socialising with family and friends, as well as increased well-being (Allcott et al., 2018[80]).

Interdependent relationships nonetheless require investments and maintenance behaviours from both partners. Partners need to communicate to each other that they value, accept and care for each other, and that they are committed to their relationship and network. For example, Utz (2015[81]) found that intimate disclosure is linked to more closeness in private communications on Facebook, but less so in public communications. This research also suggests that partner responsiveness to one's needs in online communication is less relevant to people's feelings of closeness to others than responsiveness in offline communication. Although these studies point to important differences between online and offline communication in relationships, studies on online communication are often limited to self-reports by the disclosing person and rarely examine the dyadic processes needed to fully examine relational interdependence.

Studies that compare online and face-to-face communication find that face-to-face communication is more impactful in strengthening and maintaining relationships. To highlight some examples, face-to-face support is more comforting than online support for military family members after a disruptive event (Lewandowski et al., 2011[82]), and face-to-face interactions protect older people from depression while email and telephone interactions do not (Teo et al., 2015[83]). However, it is important to note that interpersonal relationships are increasingly developed and sustained through integrated online and offline interaction. Online interactions often reinforce offline ties, and vice versa. Also, mixed-medium friendships are increasingly common, whereby relationship partners find each other online but migrate into offline communication channels. Often such mixed-medium relationships are rated similar in quality to offline-only relationships (see Chapter 5). Clearly, online communication is becoming more important to modern relationships, where the online and offline are not mutually exclusive means of communication but rather used in concert, often reinforcing and amplifying the effects of disclosure on relationship.

One aspect that has received little attention in the comparison of online and offline communication is physical touch, which is crucial in creating and strengthening close relationships. Tactile physical affection is strongly correlated with relationship quality, and conflicts are resolved more easily with increased amounts of physical touch including hugging and cuddling/holding (Gulledge, Gulledge and Stahmannn, 2003[84]). Also, daily interpersonal touch promotes physical and mental health by signalling intimacy and closeness (Debrot et al., 2013[85]). So, while you can send a "hugging emoticon", it's not the same as actually hugging a person.

In short, the global trend of the rise of new technologies provides opportunities and challenges for social relationships. For youth, and their multiple social contexts, it will be a challenge to understand how to enhance the benefits offered by new technologies while mitigating some of the associated challenges. The processes underlying the benefits and

costs for relationships and social connection, and the exact mechanisms by which communication across different media are implicated in personal and social well-being, are not well understood. It is also unclear whether online communication in isolation is still less impactful and important than face-to-face communications for the younger generations that use as much (or more) online as offline communication.

Crucially, new technologies and social media rapidly change: in the time that research establishes its opportunities or challenges, the social medium platform – and likely the research results – may already be outdated. As such, the rise of new technologies remains an exciting field to investigate, especially as we are heading for a future where 'being offline' is increasingly becoming unthinkable.

Adolescent relationships in the 21st century: Concluding remarks

The formation of lasting social connections is one of the most important developmental tasks in adolescence. It is facilitated by a number of well-researched processes in family and peer relationships, and abundant research suggests a strong association between supportive relationships and (mental) health and well-being over the lifespan. Considerably less is known about how global trends affect relationship behaviour and maintenance among youth. This chapter proposes that social connection is key to unravelling the developmental trajectories of adolescents. Specifically, it argues that to understand social connection and relationships in youth, it is essential to recognise that they form these connections in social contexts, ranging from proximal to distal.

Social changes in the distal context – such as climate change, forced displacement and the lifelong impacts of trauma, individualisation and new technologies – are necessary to explain and understand the social development of adolescents and their relationships. These relationships are inherently interdependent: young people both influence their social environments and are shaped by them. Beyond providing an overview of the implications that four global trends may have on social connection in adolescence, we hope that this chapter will stimulate future research on this fascinating and important area of research, which we expect to blossom in the years to come.

References

Allcott, H. et al. (2018), "The welfare effects of social media", *SSRN Electronic Journal*, http://dx.doi.org/10.2139/ssrn.3308640. [80]

Amato, P. (2010), "Research on divorce: Continuing trends and new developments", *Journal of Marriage and Family*, Vol. 72/3, pp. 650-666, http://dx.doi.org/10.1111/j.1741-3737.2010.00723.x. [64]

Amato, P. and S. Patterson (2017), "The intergenerational transmission of union instability in early adulthood", *Journal of Marriage and Family*, Vol. 79/3, pp. 723-738, http://dx.doi.org/10.1111/jomf.12384. [62]

Banks, D. and C. Weems (2014), "Family and peer social support and their links to psychological distress among hurricane-exposed minority youth", *American Journal of Orthopsychiatry*, Vol. 84/4, pp. 341-352, http://dx.doi.org/10.1037/ort0000006. [34]

Bastian, B. (ed.) (2018), "Personal failure makes society seem fonder: An inquiry into the roots of social interdependence", *PLOS ONE*, Vol. 13/8, p. e0201361, http://dx.doi.org/10.1371/journal.pone.0201361. [70]

Best, P., R. Manktelow and B. Taylor (2014), "Online communication, social media and adolescent wellbeing: A systematic narrative review", *Children and Youth Services Review*, Vol. 41, pp. 27-36, http://dx.doi.org/10.1016/j.childyouth.2014.03.001. [74]

Billedo, C., P. Kerkhof and C. Finkenauer (2015), "The use of social networking sites for relationship maintenance in long-distance and geographically close romantic relationships", *Cyberpsychology, Behavior, and Social Networking*, Vol. 18/3, pp. 152-157, http://dx.doi.org/10.1089/cyber.2014.0469. [78]

Birditt, K. et al. (2010), "Marital conflict behaviors and implications for divorce over 16 years", *Journal of Marriage and the Family*, Vol. 72/5, pp. 1188-1204, http://dx.doi.org/10.1111/j.1741-3737.2010.00758.x. [66]

Bolger, N. et al. (eds.) (1988), *Interacting Systems in Human Development. Research Paradigms: Present and Future*, Cambridge University Press. [11]

Bonanno, G. and E. Diminich (2012), "Annual Research Review: Positive adjustment to adversity - trajectories of minimal-impact resilience and emergent resilience", *Journal of Child Psychology and Psychiatry*, Vol. 54/4, pp. 378-401, http://dx.doi.org/10.1111/jcpp.12021. [48]

Bronfenbrenner, U. (1979), *The Ecology of Human Development: Experiments by Nature and Design*, Harvard University Press, www.hup.harvard.edu/catalog.php?isbn=9780674224575&content=reviews. [4]

Burke, M., W. Davis and N. Diffenbaugh (2018), "Large potential reduction in economic damages under UN mitigation targets", *Nature*, Vol. 557/7706, pp. 549-553, http://dx.doi.org/10.1038/s41586-018-0071-9. [21]

Burke, M., S. Hsiang and E. Miguel (2015), "Climate and conflict", *Annual Review of Economics*, Vol. 7/1, pp. 577-617, http://dx.doi.org/10.1146/annurev-economics-080614-115430. [27]

Cacioppo, J. and S. Cacioppo (2018), "The growing problem of loneliness", *The Lancet*, Vol. 391/10119, p. 426, http://dx.doi.org/10.1016/s0140-6736(18)30142-9. [9]

Cacioppo, J. et al. (2015), "The neuroendocrinology of social isolation", *Annual Review of Psychology*, Vol. 66/1, pp. 733-767, http://dx.doi.org/10.1146/annurev-psych-010814-015240. [13]

Cacioppo, J., H. Reis and A. Zautra (2011), "Social resilience: The value of social fitness with an application to the military", *American Psychologist*, Vol. 66/1, pp. 43-51, http://dx.doi.org/10.1037/a0021419. [18]

Cai, Z. (ed.) (2019), "Twentieth century morality: The rise and fall of moral concepts from 1900 to 2007", *PLOS ONE*, Vol. 14/2, p. e0212267, http://dx.doi.org/10.1371/journal.pone.0212267. [57]

Campbell, K., D. Wright and C. Flores (2012), "Newlywed women's marital expectations: Lifelong monogamy?", *Journal of Divorce & Remarriage*, Vol. 53/2, pp. 108-125, http://dx.doi.org/10.1080/10502556.2012.651966. [59]

Carrington, D. (2018), *'Our Leaders Are Like Children,' School Strike Founder Tells Climate Summit*, www.theguardian.com/environment/2018/dec/04/leaders-like-children-school-strike-founder-greta-thunberg-tells-un-climate-summit. [36]

Chen, X. et al. (2005), "Social functioning and adjustment in Chinese children: The imprint of historical time", *Child Development*, Vol. 76/1, pp. 182-195, http://dx.doi.org/10.1111/j.1467-8624.2005.00838.x. [20]

Cherlin, A. (2004), "The deinstitutionalization of American marriage", *Journal of Marriage and Family*, Vol. 66/4, pp. 848-861, http://dx.doi.org/10.1111/j.0022-2445.2004.00058.x. [61]

Clayton, S. et al. (2017), *Mental Health and Our Changing Climate: Impacts, Implications, and Guidance*, www.preventionweb.net/publications/view/52557. [32]

Couttenier, M. and R. Soubeyran (2014), "Drought and civil war in Sub-Saharan Africa", *The Economic Journal*, Vol. 124/575, pp. 201-244, http://dx.doi.org/10.1111/ecoj.12042. [26]

Dahl, R. et al. (2018), "Importance of investing in adolescence from a developmental science perspective", *Nature*, Vol. 554/7693, pp. 441-450, http://dx.doi.org/10.1038/nature25770. [3]

de Vroome, T. and F. Van Tubergen (2010), "The employment experience of refugees in the Netherlands", *International Migration Review*, Vol. 44/2, pp. 376-403, http://dx.doi.org/10.1111/j.1747-7379.2010.00810.x. [53]

Debrot, A. et al. (2013), "Touch as an interpersonal emotion regulation rrocess in couples' daily lives", *Personality and Social Psychology Bulletin*, Vol. 39/10, pp. 1373-1385, http://dx.doi.org/10.1177/0146167213497592. [85]

Ehrensaft, M. et al. (2003), "Intergenerational transmission of partner violence: A 20-year prospective study.", *Journal of Consulting and Clinical Psychology*, Vol. 71/4, pp. 741-753, http://dx.doi.org/10.1037/0022-006x.71.4.741. [45]

El-Awad, U. et al. (2017), "Promoting mental health in unaccompanied refugee minors: Reconmendations for primary support programs", *Brain sciences*, Vol. 7/11, http://dx.doi.org/10.3390/brainsci7110146. [41]

Fazel, M. et al. (2012), "Mental health of displaced and refugee children resettled in high-income countries: Risk and protective factors", *The Lancet*, Vol. 379/9812, pp. 266-282, http://dx.doi.org/10.1016/s0140-6736(11)60051-2. [40]

Feeney, B. and N. Collins (2015), "A new look at social support", *Personality and Social Psychology Review*, Vol. 19/2, pp. 113-147, http://dx.doi.org/10.1177/1088868314544222. [10]

Felitti, V. et al. (1998), "Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults", *American Journal of Preventive Medicine*, Vol. 14/4, pp. 245-258, http://dx.doi.org/10.1016/s0749-3797(98)00017-8. [46]

Finkel, E. et al. (2014), "The suffocation of marriage: Climbing Mount Maslow without enough oxygen", *Psychological Inquiry*, Vol. 25/1, pp. 1-41, http://dx.doi.org/10.1080/1047840x.2014.863723. [60]

Finkenauer, C. et al. (2017), "Examining the role of self-regulatory strength in family violence", in *The Routledge International Handbook of Self-Control in Health and Well-Being*, Routledge, http://dx.doi.org/10.4324/9781315648576-27. [35]

Finkenauer, C., R. Engels and W. Meeus (2002), "Keeping secrets from parents: Advantages and disadvantages of secrecy in adolescence", *Journal of Youth and Adolescence*, Vol. 31/2, pp. 123-136, http://dx.doi.org/10.1023/a:1014069926507. [68]

Finkenauer, C. and F. Righetti (2011), "Understanding in close relationships: An interpersonal approach", *European Review of Social Psychology*, Vol. 22/1, pp. 316-363, http://dx.doi.org/10.1080/10463283.2011.633384. [54]

GlobalWebIndex (2017), "Social media captures over 30% of online time", *GlobalWebIndex 2012-2017*, https://blog.globalwebindex.com/chart-of-the-day/social-media-captures-30-of-online-time/. [71]

Goosen, S., K. Stronks and A. Kunst (2013), "Frequent relocations between asylum-seeker centres are associated with mental distress in asylum-seeking children: A longitudinal medical record study", *International Journal of Epidemiology*, Vol. 43/1, pp. 94-104, http://dx.doi.org/10.1093/ije/dyt233. [43]

Grabe, S., L. Ward and J. Hyde (2008), "The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies.", *Psychological Bulletin*, Vol. 134/3, pp. 460-476, http://dx.doi.org/10.1037/0033-2909.134.3.460. [76]

Greenfield, P. (2018), "Studying social change, culture, and human development: A theoretical framework and methodological guidelines", *Developmental Review*, Vol. 50, pp. 16-30, http://dx.doi.org/10.1016/j.dr.2018.05.003. [55]

Gulledge, A., M. Gulledge and R. Stahmannn (2003), "Romantic physical affection types and relationship satisfaction", *The American Journal of Family Therapy*, Vol. 31/4, pp. 233-242, http://dx.doi.org/10.1080/01926180390201936. [84]

Gulliver, A., K. Griffiths and H. Christensen (2010), "Perceived barriers and facilitators to mental health help-seeking in young people: A systematic review", *BMC Psychiatry*, Vol. 10/1, http://dx.doi.org/10.1186/1471-244x-10-113. [69]

Hales, A. et al. (2018), "Cell phone-induced ostracism threatens fundamental needs", *The Journal of Social Psychology*, Vol. 158/4, pp. 460-473, http://dx.doi.org/10.1080/00224545.2018.1439877. [77]

Hampton, K., L. Sessions and E. Her (2011), "Core networks, social isolation, and new media", *Information, Communication & Society*, Vol. 14/1, pp. 130-155, http://dx.doi.org/10.1080/1369118X.2010.513417. [75]

Harville, E. et al. (2011), "Experience of Hurricane Katrina and reported intimate partner violence", *Journal of Interpersonal Violence*, Vol. 26/4, pp. 833-845, http://dx.doi.org/10.1177/0886260510365861. [30]

Hidalgo, F. et al. (2010), "Economic determinants of land invasions", *Review of Economics and Statistics*, Vol. 92/3, pp. 505-523, http://dx.doi.org/10.1162/rest_a_00007. [24]

Holt-Lunstad, J. (2018), "Why social relationships are important for physical health: A systems approach to understanding and modifying risk and protection", *Annual Review of Psychology*, Vol. 69/1, pp. 437-458, http://dx.doi.org/10.1146/annurev-psych-122216-011902. [6]

Holt-Lunstad, J., T. Smith and J. Layton (2010), "Social relationships and mortality risk: A meta-analytic review", *PLoS Medicine*, Vol. 7/7, p. e1000316, http://dx.doi.org/10.1371/journal.pmed.1000316. [12]

Hsiang, S., M. Burke and E. Miguel (2013), "Quantifying the influence of climate on human conflict", *Science*, Vol. 341/6151, pp. 1235367-1235367, http://dx.doi.org/10.1126/science.1235367. [23]

Hughes, K. et al. (2017), "The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis", *The Lancet Public Health*, Vol. 2/8, pp. e356-e366, http://dx.doi.org/10.1016/s2468-2667(17)30118-4. [49]

Inglehart, R. and C. Welzel (2010), *Changing Mass Priorities: The Link Between Modernization and Democracy*, American Political Science Association, http://dx.doi.org/10.2307/25698618. [58]

Jakobsen, M., M. Demott and T. Heir (2014), "Prevalence of psychiatric disorders among unaccompanied asylum-seeking adolescents in Norway", *Clinical Practice & Epidemiology in Mental Health*, Vol. 10/1, pp. 53-58, http://dx.doi.org/10.2174/1745017901410010053. [44]

Kamp-Dush, C. et al. (2018), "The intergenerational transmission of partnering", *PLOS ONE*, Vol. 13/11, p. e0205732, http://dx.doi.org/10.1371/journal.pone.0205732. [65]

Kaniasty, K. (2012), "Predicting social psychological well-being following trauma: The role of postdisaster social support.", *Psychological Trauma: Theory, Research, Practice, and Policy*, Vol. 4/1, pp. 22-33, http://dx.doi.org/10.1037/a0021412. [33]

Keenan, H. et al. (2004), "Increased incidence of inflicted traumatic brain injury in children after a natural disaster", *American Journal of Preventive Medicine*, Vol. 26/3, pp. 189-193, http://dx.doi.org/10.1016/j.amepre.2003.10.023. [31]

Keles, S. et al. (2017), "The longitudinal relation between daily hassles and depressive symptoms among unaccompanied refugees in Norway", *Journal of Abnormal Child Psychology*, Vol. 45/7, pp. 1413-1427, http://dx.doi.org/10.1007/s10802-016-0251-8. [52]

Kelley, J. and N. Graaf (1997), "National context, parental socialization, and religious belief: Results from 15 nations", *American Sociological Review*, Vol. 62/4, p. 639, http://dx.doi.org/10.2307/2657431. [14]

Kerkhof, P., C. Finkenauer and L. Muusses (2011), "Relational consequences of compulsive internet use: A longitudinal study among newlyweds", *Human Communication Research*, Vol. 37/2, pp. 147-173, http://dx.doi.org/10.1111/j.1468-2958.2010.01397.x. [79]

Lavner, J. and T. Bradbury (2012), "Why do even satisfied newlyweds eventually go on to divorce?", *Journal of Family Psychology*, Vol. 26/1, pp. 1-10, http://dx.doi.org/10.1037/a0025966. [67]

Lewandowski, J. et al. (2011), "The effect of informal social support: Face-to-face versus computer-mediated communication", *Computers in Human Behavior*, Vol. 27/5, pp. 1806-1814, http://dx.doi.org/10.1016/j.chb.2011.03.008. [82]

Mares, D. (2013), "Climate change and levels of violence in socially disadvantaged neighborhood groups", *Journal of Urban Health : Bulletin of the New York Academy of Medicine*, Vol. 90/4, pp. 768-83, http://dx.doi.org/10.1007/s11524-013-9791-1. [28]

Marsee, M. (2008), "Reactive aggression and posttraumatic stress in adolescents affected by Hurricane Katrina", *Journal of Clinical Child & Adolescent Psychology*, Vol. 37/3, pp. 519-529, http://dx.doi.org/10.1080/15374410802148152. [29]

Miller, G., E. Chen and K. Parker (2011), "Psychological stress in childhood and susceptibility to the chronic diseases of aging: Moving toward a model of behavioral and biological mechanisms.", *Psychological Bulletin*, Vol. 137/6, pp. 959-997, http://dx.doi.org/10.1037/a0024768. [47]

Missirian, A. and W. Schlenker (2017), "Asylum applications respond to temperature fluctuations", *Science*, Vol. 358/6370, pp. 1610-1614, http://dx.doi.org/10.1126/science.aao0432. [39]

Morelli, S. et al. (2017), "Empathy and well-being correlate with centrality in different social networks", *Proceedings of the National Academy of Sciences*, Vol. 114/37, pp. 9843-9847, http://dx.doi.org/10.1073/pnas.1702155114. [17]

Patton, G. et al. (2018), "Adolescence and the next generation", *Nature*, Vol. 554/7693, pp. 458-466, http://dx.doi.org/10.1038/nature25759. [1]

Reis, H., E. Lemay and C. Finkenauer (2017), "Toward understanding understanding: The importance of feeling understood in relationships", *Social and Personality Psychology Compass*, Vol. 11/3, p. e12308, http://dx.doi.org/10.1111/spc3.12308. [19]

Repetti, R., S. Taylor and T. Seeman (2002), "Risky families: Family social environments and the mental and physical health of offspring", *Psychological bulletin*, Vol. 128/2, pp. 330-66, www.ncbi.nlm.nih.gov/pubmed/11931522. [15]

Salvatore, J. et al. (2018), "Genetics, the rearing environment, and the intergenerational transmission of divorce: A Swedish national adoption study", *Psychological Science*, Vol. 29/3, p. 370, http://dx.doi.org/10.1177/0956797617734864. [63]

Santos, H., M. Varnum and I. Grossmann (2017), "Global increases in individualism", *Psychological Science*, Vol. 28/9, pp. 1228-1239, http://dx.doi.org/10.1177/0956797617700622. [56]

Sarsons, H. (2015), "Rainfall and conflict: A cautionary tale", *Journal of Development Economics*, Vol. 115, pp. 62-72, http://dx.doi.org/10.1016/J.JDEVECO.2014.12.007. [25]

Sawyer, S. et al. (2012), "Adolescence: A foundation for future health", *The Lancet*, Vol. 379/9826, pp. 1630-1640, http://dx.doi.org/10.1016/s0140-6736(12)60072-5. [7]

Sawyer, S. et al. (2018), "The age of adolescence", *The Lancet Child & Adolescent Health*, Vol. 2/3, pp. 223-228, http://dx.doi.org/10.1016/s2352-4642(18)30022-1. [2]

Solar, O. and A. Irwin (2010), "A conceptual framework for action on the social determinants of health", *Social Determinants of Health Discussion Paper 2*, World Health Organization, https://apps.who.int/iris/bitstream/handle/10665/44489/9789241500852_eng.pdf;jsessionid=164D79C2CAE74BF15FEF46B790924B18?sequence=1. [5]

Stefanek, E. et al. (2012), "Depressive symptoms in native and immigrant adolescents: The role of critical life events and daily hassles", *Anxiety, Stress & Coping*, Vol. 25/2, pp. 201-217, http://dx.doi.org/10.1080/10615806.2011.605879. [51]

Teo, A. et al. (2015), "Does mode of contact with different types of social relationships predict depression in older adults? Evidence from a nationally representative survey", *Journal of the American Geriatrics Society*, Vol. 63/10, pp. 2014-2022, http://dx.doi.org/10.1111/jgs.13667. [83]

Uhls, Y., N. Ellison and K. Subrahmanyam (2017), "Benefits and costs of social media in adolescence", *Pediatrics*, Vol. 140/Supplement 2, pp. S67-S70, http://dx.doi.org/10.1542/peds.2016-1758e. [73]

Ungar, M., M. Ghazinour and J. Richter (2013), "Annual research review: What is resilience within the social ecology of human development?", *Journal of Child Psychology and Psychiatry*, Vol. 54/4, pp. 348-366, http://dx.doi.org/10.1111/jcpp.12025. [8]

UNHCR (2017), *UNHCR Global Rrends - Forced Displacement in 2017*, www.unhcr.org/globaltrends2017/. [37]

UNICEF (2017), *The State of the World's Children 2017: Children in a Digital World*, UNICEF Publications, www.unicef.org/publications/index_101992.html. [72]

Utz, S. (2015), "The function of self-disclosure on social network sites: Not only intimate, but also positive and entertaining self-disclosures increase the feeling of connection", *Computers in Human Behavior*, Vol. 45, pp. 1-10, http://dx.doi.org/10.1016/j.chb.2014.11.076. [81]

Watts, N. et al. (2018), "The 2018 report of the Lancet Countdown on health and climate change: Shaping the health of nations for centuries to come", *The Lancet*, Vol. 392/10163, pp. 2479-2514, http://dx.doi.org/10.1016/s0140-6736(18)32594-7. [22]

WeiWei, A. (2017), "Human flow", *Amazon Studios and Participant Media*. [38]

Willems, Y. et al. (2019), "Out of control: Examining the association between family conflict and self-control in adolescence in a genetically sensitive design", *Journal of the American Academy of Child & Adolescent Psychiatry*, http://dx.doi.org/10.1016/j.jaac.2019.02.017. [50]

Willems, Y. et al. (2018), "The relationship between family violence and self-control in adolescence: A multi-level meta-analysis", *International Journal of Environmental Research and Public Health*, Vol. 15/11, p. 2468, http://dx.doi.org/10.3390/ijerph15112468. [16]

World Bank (2017), *Forcibly Displaced: Toward a Development Approach Supporting Refugees, the Internally Displaced, and Their Hosts*, The World Bank, http://dx.doi.org/10.1596/978-1-4648-0938-5. [42]

Part III. Online opportunities and risks: Ensuring child well-being

Chapter 8. Children's time online and well-being outcomes

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This paper reviews existing knowledge on how the time children spend using digital technology affects their well-being in order to understand when and why digital technology has a positive or negative influence on children. This is relevant, as the increase in children's engagement with digital technology has led to concerns about whether this is healthy or harmful. The methodology used is an evidence-focused literature review, which includes studies of children aged 0-18. In addition to summarising existing evidence, the paper emphasises the methodological limitations that exist in this area of research. The literature is reviewed in light of these limitations to determine how much it can truly tell us about impacts on child well-being. The paper highlights that methodological limitations need to be more carefully considered in research, attributing the general lack of conclusive evidence to these limitations. The paper provides concrete recommendations to improve research in this area.

This chapter is based on earlier work published as: Kardefelt-Winther, D. (2017), "How does the time children spend using digital technology impact their mental well-being, social relationships and physical activity? An evidence focused literature review", Innocenti Discussion Paper 2017-02, UNICEF Office of Research – Innocenti, Florence, www.unicef-irc.org/publications/pdf/Children-digital-technology-wellbeing.pdf

Introduction

Children's use of digital technology has increased rapidly over the past decade, raising important questions around how the time spent on digitally mediated activities might affect children in positive or negative ways (Putnam, 2000[1]; Turkle, 2011[2]; Bell, Bishop and Przybylski, 2015[3]; George and Odgers, 2015[4]). As George and Odgers (2015[4]) state, the question is no longer if children are using digital technology, but how, why and with what effects. It is clear that digital technology offers many potential benefits to children, allowing them to connect with peers or access educational resources or entertainment (Livingstone and Bober, 2006[5]; Valkenburg and Peter, 2009[6]; boyd, 2014[7]). At the same time, there are legitimate concerns around who children interact with online (Madden et al., 2012[8]), if they experience cyberbullying or access age-appropriate content (boyd and Hargittai, 2013[9]), or whether screen-based communication might hurt their social development or well-being (George and Odgers, 2015[4]).

In this chapter, a broad definition of digital technology is used to include all digital devices, such as computers, tablets and mobile phones, as well as the many digitally mediated activities that children today engage in via these devices, such as using the Internet, going on social networking sites, chatting or playing video games. Television is considered separately. Child well-being is considered as a multi-dimensional concept which in this paper covers mental/psychological, social and physical dimensions. The paper does not consider in detail the impact of specific content or experiences that children may have online. While recognising that these are likely important factors in determining the outcomes of children's online engagement, the scope of this chapter is around the impact of time use specifically.

Even though adults also use digital technology to a great extent, concerns tend to centre on children's use because of the many social, biological, cognitive and psychological changes that characterise this life period. Children go through critical developmental stages, such as identity formation and building positive friendships, while immersed in the digital age (George and Odgers, 2015[4]). Turkle (2011[2]) has argued that children today are interacting more with their phone than with each other, which may cause them to miss out on important social experiences. Others say that children still interact with one another as much as before and that the interactions are of similar quality; it is the venues for social interaction that have changed, to become digital (e.g. boyd (2014[7])). Because friendships and communication with peers are important for the development of lifelong social skills, there are concerns that children's social skills might somehow be altered or negatively affected when digitally mediated ((George and Odgers, 2015[4]); see also Chapter 5 in this volume). This extends to a broader societal concern that children may lose out in important areas of life because they spend so much of their time in front of screens. In this respect, the digital age has introduced new challenges for parents who face the difficult task of striking a balance between allowing independent exploration on the one hand, and providing appropriate limitations and oversight on the other (Anderson, 2016[10]).

Responding to some of these concerns, researchers have explored how the time children spend using digital technology affects their lives across various domains. Over the course of the past two decades, individual research studies have indicated that increased use of digital technology might have some negative impacts on children's well-being, ranging from mental health issues such as depression (Kim et al., 2010[11]) or addiction (Young, 1996[12]), to public health issues like obesity (Sisson et al., 2010[13]). At the same time, most of these claims have been disputed by other scholars and many studies show how digital technology brings great benefits to children (e.g. Livingstone et al. (2011[14]), Byrne et al.

(2016[15]); Baranowski et al. (2008[16]); Granic, Lobel and Engels (2014[17])), highlighting its social and interactive features (e.g. boyd (2014[7]), Cole and Griffiths (2007[18]), Hussain and Griffiths (2009[19]), and Valkenburg and Peter (2007[20])), how it opens up new opportunities for performance, creativity and expression (Lowood, 2008[21]), and features as an everyday practice in the home for purposes of social interaction and relaxation with the family (Enevold, 2012[22]). Recent research suggests that video gaming positively influences cognitive, motivational, emotional and social development (Granic, Lobel and Engels, 2014[17]), while other research suggests that video gaming might disrupt children's sleep patterns (Dworak et al., 2007[23]). So what can we make of such a seemingly contradictory body of evidence?

As Chas Critcher has written, concerns that new technologies, activities or content might affect children negatively are not a recent phenomenon in the Western public discourse, but go as far back as the early 1900s (Livingstone and Drotner, 2008[24]). Back then, there were concerns about how access to public cinema would affect children, followed by worries around the negative impact of comic books, targeted from the late 1940s by bans in parts of the United States because they supposedly made young people criminal and promiscuous. Concerns escalated with the introduction of the television in 1950, which was blamed for being addictive and isolating. In the 1970s, computer games were accused of making people both addicted and aggressive. It is not surprising to see the same pattern repeated today with digital technology, but it is important to critically appraise the legitimacy of these concerns.

Understandably, parents, teachers and others who have an interest in children's health and well-being grow increasingly concerned as children spend more time using digital technology, but also confused due to the lack of consensus on whether this is good or bad for children. This confusion is apparent not only among parents in the developed world, but also in developing countries where children are increasingly gaining access to digital technology. Survey data from the Swedish Media Council (Statens medieråd, 2015[25]) show how parents in a developed country with near-ubiquitous access to digital technology consider online gaming a great asset in their children's lives, providing them with many opportunities to benefit, while at the same time rating online gaming as one of their greatest sources of worry, fearing that children might spend too much time playing.

A similar narrative emerged from focus groups with parents of child Internet users conducted in South Africa (Burton, Leoschut and Phyfer, 2016[26]), where parents acknowledged the many benefits that the Internet could offer to their children while simultaneously expressing concern over the time their children spent online and the many risks they may encounter in the process. It is clear that parents face a difficult task in mediating their children's use of digital technology, but it is an important one due to the central roles that both parents and digital technologies play in a child's life. In the interest of making this task easier, this chapter presents the results of an evidence-focused literature review of how time spent on digital technology affects children's lives, focusing on impacts in three domains: their mental well-being, social relationships and physical activity. The chapter examines the gaps in evidence and suggests new directions for future research and improvements to research methodology.

The main research question posed in this chapter is: How does the time children spend using digital technology affect their well-being?

Because children's well-being is a complex concept with no universally accepted measurement, one common approach to conceptualising child well-being is to consider it

as a multi-dimensional concept, covering mental/psychological, social and physical dimensions (Chapple and Richardson, 2010[27]).

The research question was broken down by these dimensions as follows:

- impact on children's mental well-being
- impact on children's social relationships
- impact on children's participation in physical activity.

While child well-being in relation to digital technology has been explored using a variety of subjective and objective measures, in this chapter any references to child well-being refers to self-reported subjective well-being unless stated otherwise.

Terminology and theoretical assumptions

In the interest of clarity, the term digital technology will be used as a catch-all term that includes digital devices, such as computers, tablets and mobile phones, as well as the many digitally mediated activities that children today engage in via these devices, such as using the Internet, going on social networking sites, chatting or playing video games. Television is not encompassed by this term and will be mentioned separately when relevant.

For scholars studying time use and digital technology, the main purpose is typically to investigate how the time spent on digital technology affects an individual in various domains. For example, studies may look at specific outcomes such as how time spent on digital technology affects self-reported well-being over time, or if perceived quality of friendships is increased or reduced. When applied to children, the key aim for studies of time use has typically been to uncover eventual risks with overusing digital technology and to ensure an optimal developmental trajectory, avoid life interference and mitigate any negative health outcomes that might result.

A common assumption in this area of research is that time is a zero-sum commodity and therefore time spent on digital technology will inevitably detract from other activities that are thought to be more valuable, such as socialising face-to-face, reading books or exercising; this is sometimes referred to as the displacement hypothesis, which posits that the negative effects of technology are linearly proportional to exposure (Neuman, 1988[28]). This hypothesis initially received some support and its assumptions served to inform early policy statements and guidelines that proposed restrictions to children's engagement with digital technology, such as the former guidelines by the American Academy of Pediatrics (AAP, 1999[29]). However, more recent evidence suggests that the displacement hypothesis may be simplistic or even inaccurate today, as recent technological developments offer many opportunities for children to pursue developmentally valuable challenges and activities (Przybylski and Weinstein, 2017[30]). These developments are reflected in an updated policy statement by the AAP which contains a less restrictive set of guidelines, recognising the value of digital technology also for the younger age groups (AAP, 2016[31]).

In light of these developments, some researchers have argued that the impact of digital technology on children might not necessarily be linear, in the sense that more use does not always lead to worse outcomes. Przybylski and Weinstein (2017[30]) suggest that the impact of the time spent on digital technology on children might rather be explained by a curvilinear relationship, which challenges the displacement hypothesis. In other words, not using digital technology at all might be expected to have a negative effect on children, while moderate levels of use could have a positive effect and excessive use might have a

negative effect. Problematically, there is no clear agreement on when the time spent on digital technology shifts from being moderate to excessive, as this is likely to be highly individual. In this respect, excessive use is a value laden term and determining "how much is too much" inevitably depends on the age of the child, their individual characteristics, the culture that they live in and their broader life context.

For digital technology especially, opinions on "how much is too much" also vary over time and across generations. This makes the question of "how much is too much" in relation to digital technology particularly complex, as we might expect adults and children to have different opinions on the matter with neither group necessarily being more right than the other. This has made it difficult for researchers to design appropriate studies on time use that allow us to make recommendations that are grounded in children's lived experiences, because adult perceptions on "how much is too much" tend to drive the inquiry. Since we cannot yet objectively determine how much is too much for a given individual, drawing the line between an engaging digital hobby and excessive use is difficult – many people have hobbies on which they sometimes spend a bit too much time to the detriment of other activities, but this is not always a problem for them, as much as it might be a problem for the people around them (Cover, 2006[32]; Charlton and Danforth, 2007[33]; Kardefelt-Winther, 2014[34]).

Based on this, the term excessive use will be used to denote that a great deal of time is spent using digital technology, but without setting a specific threshold for how much time this implies in practice. In this respect Larkin and Griffiths' (1998[35]) perspective is adopted, that for some individuals in some contexts, it makes sense to use excessively because the positives outweigh the negatives. Where studies have provided specific time-thresholds for excessive use, this will be highlighted.

Some scholars who study time use and digital technology have taken an exclusively clinical approach to the subject by arguing that some people use digital technology excessively because they are addicted to it, or addicted to specific activities mediated by digital technology. The harms that are assumed to result are suggested to be similar to the harms experienced from substance addiction. The assumptions that underlie this perspective are that behaviours and activities can be addictive in much the same way as substances (Marlatt et al., 1988[36]; Marks, 1990[37]), and that digital technologies, due to their many rewarding features, may be particularly addictive.

Addiction to digital technology is typically measured by asking questions based on substance addiction assessment instruments (Petry et al., 2014[38]). The key aim for studies appropriating an addiction perspective has been to show that digital technology can be truly addictive in order to advocate for the need for professional treatment of those who are affected. The proposal that digital technology can be addictive has been challenged by many researchers over the years and there is no consensus yet on whether such a perspective on excessive use of digital technology is accurate or useful (Griffiths, 2000[39]; Cover, 2006[32]; Kardefelt-Winther, 2014[34]; Van Rooij and Prause, 2014[40]; Griffiths et al., 2016[41]; Aarseth et al., 2016[42]).

Research on time use and addiction deal with distinctly different questions, but researchers often conflate them. While both areas focus to some extent on the link between time use and negative outcomes for the individual, the addiction perspective is driven by the underlying assumption that excessive use of digital technology may be caused by an addictive disorder, rather than driven by fascination or engagement.

The addiction perspective also takes a binary approach where an individual either has an addictive disorder or not, and where the presence of a disorder always leads to negative outcomes. In comparison, the study of time use views the time children spend on digital technology on a continuum where some negative outcomes can co-exist with benefits. That researchers conflate these perspectives has led to conceptual struggles in this area of research and in the public discourse, which has been recognised and discussed by several groups of researchers in recent years (Griffiths et al., 2016[41]; Aarseth et al., 2016[42]; Kardefelt-Winther et al., 2017[43]).

One unfortunate consequence of this confusion is that many studies have focused on exploring the hypothetical idea of addiction to technology instead of exploring why some children spend a lot of time using digital technology and when this might affect their lives and well-being positively or negatively (Kardefelt-Winther, 2014[34]). The latter question seems more relevant in response to the growing societal concerns around children's increasing use of digital technology.[1]

Methodology

To respond to the main research question, an evidence-focused literature review was undertaken by drawing on some of the core principles of a systematic review (Khan et al., 2003[44]), while still leaving room for reflexivity and interpretation.

The review encompassed literature published between 2005 and 2017. The time frame captures the period when digital technology became available for everyday use by children in Western societies and regular use became the norm. The search strategy involved three step-by-step processes:

1. an academic literature search for peer reviewed journal articles using the databases PubMed, PsycINFO and Google Scholar
2. the identification of three experts working in the field followed by an email exchange to ascertain their knowledge of and access to further literature, and recommendations for other sources (snowballing technique)
3. browsing the reference list of empirical articles found through processes 1 and 2 for additional relevant articles.

Search strings based on the three areas of interest were used for the database search. Search strings used were: (children digital technology AND (wellbeing OR well-being)), (children digital media AND (wellbeing OR well-being), (digital* OR "digital technology" AND child*), (digital* OR "digital technology" AND (well-being OR wellbeing OR physical* OR social* OR relationship*)), (digital* OR "digital technology" AND (child* OR adolescent*) AND (well-being OR wellbeing OR physical* OR social* OR relationship*)).

The results for each search string were sorted by relevance where possible, otherwise sorted by date, and screened for relevance to the three sub-questions. Results from the first ten pages of each search engine were included. If selected, the article was categorised according to theme (mental well-being, social relationships or physical activity). Cross-sectional studies, longitudinal studies and meta-analyses were included. Non-empirical chapters including literature reviews were excluded to avoid relying on secondary data sources. Only studies of children (age 0-18 inclusive) were included in the final corpus. Studies that used addiction measurements or lacked an indicator for time use were excluded.

A total of 301 unique, peer reviewed journal articles were identified in the literature search. Out of these articles, 226 articles were excluded as they covered the wrong subject or lacked indicators for time use, 10 articles were excluded for being reviews of the literature, and 45 articles were excluded for being studies of the adult population. A total of 20 articles were retained based on the database search, which is 6.6% of the total number of articles found in the search.

While every effort was made to capture a broad spectrum of material of possible relevance to the research questions, it was expected that achieving comprehensive coverage was unlikely only through database searches. Experts contributed another 6 articles. Browsing the reference lists of empirical articles from the literature search yielded another 29 relevant articles, making the total number of articles included in this review N=55. One limitation of the literature search was that only studies written in English were included.

Limitations

Before presenting the results of the literature review, limitations to research studying the impact of digital technology on people, sometimes referred to as "media effects" research, are highlighted. These limitations are highlighted because they generalise across most studies included in this literature review, which means that even the most rigorous studies presented in this chapter should be interpreted with some caution.

First, many studies are correlational in nature and use cross-sectional data, which means that they cannot establish what is cause and effect or establish long-term consequences. In other words, the data collected cannot be used to determine whether an effect, say increased levels of depression, is the cause or the consequence of using digital technology. Both may be plausible – a person could feel more depressed after spending a lot of time online, or someone who is feeling depressed might spend a lot of time online to cope with these feelings. Longitudinal studies are needed to tell us more about causality and whether any effect is persistent over time or not, which is important to determine if the time spent on digital technology has an effect on well-being in the long term.

Second, it is likely that individual differences influence how the use of digital technology affects a child, depending on their age, gender, personality, life situation, social and cultural environment and other factors (Livingstone et al., 2011[14]; Kardefelt-Winther, 2014[34]; Byrne et al., 2016[15]; Livingstone, 2016[45]; Banaji, 2016[46]). Most studies tend to account only for a limited number of background variables for practical reasons such as survey cost and length. Traditionally, it has been more common to only investigate the psychological characteristics of a child and what they do online, without a strong emphasis on their broader life context. This means that studies may a) overestimate the effect of digital technology on children, or b) assume that digital technology has an effect when the effect results from another factor that was not measured.

Third, it seems likely that the activities and content children engage in via digital technology are equally or more relevant than overall time use for positive or negative outcomes (Etchells et al., 2017[47]; Przybylski and Weinstein, 2017[30]). Focusing on time use alone without considering what a child is actually doing online limits the scope of the inquiry and the value of the conclusions drawn.

Fourth, most research on media effects do not have pre-registered study protocols, which means that the studies may suffer from confirmation bias or selective reporting of results. Pre-registering research protocols is part of a recent movement towards reproducible science, where researchers are encouraged to publicly register a study and its hypotheses

prior to data collection to be transparent about the foundation for their analysis. The importance of pre-registration was recently advocated in an article in *Nature* as a way to combat low reproducibility of research findings and to maximise the efficiency of the research community's use of the public's investment in research (Munafò et al., 2017[48]). While pre-registration of study protocols for randomised controlled trials in clinical medicine has become standard practice, this is not the case in the psychological sciences. Pre-registration is increasingly advocated to reassure the research community that the analysis conducted was planned in advance, to avoid cherry-picking of results and intentionally or unintentionally highlighting only those relationships that were statistically significant (Munafò et al., 2017[48]).

With these shortcomings in mind, the next sections will present the results of the literature review.

Literature review

Impact of time spent using digital technology on children's mental well-being

Some cross-sectional studies have found a positive association between both Internet and mobile phone use and self-reported feelings of depression (Bezinović et al., 2015[49]; Ikeda and Nakamura, 2014[50]; Kim et al., 2010[11]). However, the effect sizes for the associations found were small, which is a finding that has also been observed in larger and more robust studies. For example, in a study of 6 000 children aged 12-18, Ferguson (2017[51]) found a small positive association between screen time and depressive symptoms and delinquency.

A longitudinal study by Selfhout and colleagues (2009[52]) provides a more nuanced perspective on the relationship between digital technology and depression; for children with low quality friendships, spending time just surfing seemed to lead to a slight increase in self-reported feelings of depression over time (Selfhout et al., 2009[52]). For children with medium or high quality friendships, there was no association between time spent just surfing and self-reported feelings of depression. However, if the children with low quality friendships instead spent their time socialising with others online, this led to reduced self-reported feelings of depression, leading the authors to conclude that what children do online is crucial to consider in addition to the time they spend. The authors suggest that reduced feelings of depression might occur because socialising online increases the chance of receiving social support, which may otherwise not be available to children with low quality friendships.

Ferguson (2017[51]) found a small but significant positive association between time use and feelings of depression and delinquency only for those children who repeatedly reported more than six hours of screen time per day. Given the relatively weak impact even on children who report more than six hours of screen time per day, the author suggests that reducing screen time in efforts to improve youth well-being is unlikely to be effective for most children. Ferguson (2017[51]) suggests based on these findings that youth seem to be quite resilient to screen consumption at much higher levels – up to six hours daily – than is typically recommended by most policy statements.

This perspective is further supported by a recent cross-sectional, large-scale, pre-registered study conducted in the United Kingdom with over 120 000 15-year-old children, where Przybylski and Weinstein (2017[30]) found that the time children spend using digital technology only had negligible impacts on mental well-being. In this robust inquiry, Przybylski and Weinstein (2017[30]) studied the impact of a variety of digitally mediated

activities on children's mental well-being, such as watching television and movies, playing video games, using computers and using smart phones.

The activities differed somewhat in their respective impact, but the authors conclude that in general, no use at all was associated with lower mental well-being, while moderate use (between 2-5 hours per day depending on the activity) seemed to have a small positive effect on mental well-being. Watching television and movies or using computers had a small negative impact when use exceeded 4 hours per day, in contrast to smart phones which had a small negative impact when use exceeded 2 hours per day. Playing video games showed a small negative impact after use exceeded 7 hours a day. Prior to reaching these cut-off points, each activity showed a positive impact on mental well-being. The study controlled for gender, ethnicity and economic factors. The negative impacts were somewhat higher when the time spent on digital technology went beyond these cut-off points during weekdays, indicating that for some children, screen time might interfere with structured activities during the week, such as homework, but can be used more extensively on weekends.

An important point emphasised by the authors was that even though negative effects were found after the time spent exceeded a certain point, these effects were very small, contributing less than 1% to explaining the overall well-being of the young people in the sample. This led the authors to conclude that "the possible deleterious relation between media use and well-being may not be as practically significant as some researchers have argued" (Przybylski and Weinstein, 2017, p. 213[30]). Similar findings have since been reproduced by an analysis of three large-scale datasets (N=335 358) in the most robust effort so far to study associations between well-being and technology use, which was conducted after the first version of this review was published (Orben and Przybylski, 2019[53]).

For very young children, findings from a large cohort study of more than 13 000 children aged five in the United Kingdom show that using screen entertainment for more than 2 hours a day was associated with a small increase in emotional and conduct problems in girls only. The study found no evidence that longer duration of screen usage was associated with any other mental health problems investigated for boys or girls, such as hyperactivity, peer problems or prosocial problems (Griffiths et al., 2010[54]). A qualitative study providing case study evidence from observations and participatory research with more than 50 families and their 3-4 year-old children in Scotland (United Kingdom) found no evidence from parents that technology was having a detrimental effect on their children in terms of behaviour, health or learning (Plowman and McPake, 2013[55]).

This was further supported by a longitudinal study that followed UK children from age 5 to 7, finding no negative impact from playing video games on either conduct problems, emotional symptoms, hyperactivity/inattention, peer relationship problems or pro-social behaviour (i.e. behaviours which contribute positively to society or the social context (OECD, 2011[56])), with no gender differences observed (Parkes et al., 2013[57]). Television viewing however was associated with a small increase in conduct problems over time, if viewing exceeded 3 hours per day.

In a study of children aged 10-15 years old, Przybylski (2014[58]) found that low levels of video game playing of less than one hour a day were associated with many benefits, such as higher levels of pro-social behaviour and life satisfaction, as well as lower levels of conduct problems, hyperactivity, peer problems and emotional problems. Children who played between 1-3 hours per day saw no effects on these outcomes, while those who spent more than half of their daily free time on video games saw some small negative effects.

This supports the idea that video games can function similarly to traditional forms of play, presenting opportunities for identity development as well as cognitive and social challenges (Przybylski, 2014[58]). However, as stated previously, after time spent on gaming exceeds a certain threshold these positive influences may diminish or disappear.

Looking at another popular online activity, use of social networking sites, longitudinal research found that too much time spent on this activity might have some negative impact on mental well-being (Mcdool et al., 2016[59]). Exploring the relationship between time spent on social networking sites and mental well-being further, an experimental study found that passive Facebook use, meaning passively browsing news feeds or looking at friends' pages and pictures without interacting with others, led to a decrease in well-being by enhancing feelings of envy (Verduyn et al., 2015[60]). This might explain why a number of studies of young adults (e.g. Kross et al. (2013[61]), Chou and Edge (2012[62])) have found a negative association between using social networking sites and well-being; as profiles on social networking sites are often used to craft and convey a positive image of a person, this might influence our perceptions of other people and their lives and lead to feelings of envy or inadequacy.

Taken together, this review shows that the time spent on digital technology can have both positive and negative effects on child well-being, depending on the activity and how much time is spent. No use and high use tends to be associated with negative effects, while moderate use seems to have positive effects. However, these effects - whether positive or negative - are typically weak and only contribute a small part to explaining overall child mental well-being.

As a number of studies have concluded, if the goal is to improve the mental well-being of children it seems more important to ensure a healthy lifestyle for children in general rather than reducing screen time. As Przybylski (2014[58]), Parkes et al. (2013[57]) and Ferguson (2017[51]) suggest in their respective studies, compared with factors shown to have robust and enduring effects on child well-being such as family functioning, social dynamics at school and socio-economic conditions, the direct influence of time spent using digital technology does not seem as important. This is further explored in study conducted by Orben and Przybylski (2019[53]), published after the first version of this review was completed. While gender differences were found in relation to how children use digital technology, few significant gender differences were found in these studies in terms of the impact on mental well-being.

As Przybylski (2014[58]) suggests, even if no direct negative effects result from heavy technology use, a potential issue is that it may crowd out other activities that could benefit the child. Longitudinal data and cohort studies will be necessary to understand the cumulative effects of spending a lot of time on digital technology from a young age.

Impact of time spent using digital technology on children's social relationships

Research on the impact of digital technology on children's social relationships tend to follow four main hypotheses, some of which predict positive outcomes while others predict negative outcomes. These hypotheses are expanded upon in chapter 5.

- The first hypothesis is the displacement hypothesis mentioned previously, suggesting that online social interaction is replacing face-to-face interaction which could result in lower social capital and fewer personal acquaintances (Kraut et al., 1998[63]; Putnam, 2000[1]; Turkle, 2011[2]).

- The second hypothesis is the rich-get-richer hypothesis (Kraut et al., 2002[64]), suggesting that those who already have strong social networks and skills will benefit more from digital technologies in terms of social interaction than those who have weaker social connections.
- The third hypothesis is an alternative to the rich-get-richer hypothesis, called the social compensation hypothesis, which essentially suggests that online communication will be more beneficial to people who are socially anxious and isolated as they may feel more at ease when developing friendships online in a safe environment (McKenna, Green and Gleason, 2002[65]; Kraut et al., 2002[64]).
- The fourth hypothesis is the stimulation hypothesis (Valkenburg and Peter, 2007[20]), which suggests that online communication stimulates communication with existing friends, leading to mostly positive outcomes and stronger friendships overall.

Studies in this area of research have typically focused on exploring one or several of these hypotheses.

A cross-sectional study of 1 300 adolescents in the United States aged 12-18 years old showed that although time spent on digital technology did reduce the amount of time adolescents spent interacting with their parents, it did not actually reduce the quality of the parent-child relationship (Lee, 2009[66]). While time spent using a computer to study was related to spending less time with friends, greater engagement in online communication seemed to strengthen friendships.

The positive relationship between online communication and friendship quality or social capital has been found in a number of cross-sectional studies both of children, adolescents and young adults (Peter, Valkenburg and Schouten, 2005[67]; Valkenburg and Peter, 2007[20]; Ellison, Steinfield and Lampe, 2007[68]; Jacobsen and Forste, 2011[69]; Davis, 2013[70]). For example, Peter and colleagues (2005[67]) found that extroverted individuals tended to self-disclose and communicate online more often than others, which improved their online friendships. In other words, there are good grounds to believe that it is easier to talk about personal or sensitive topics online, which would account for some of the positive associations observed between online communication and social relationships.

Similar findings also emerged from a qualitative study (Davis, 2012[71]). As another example, Valkenburg and Peter (2007[20]) found in a cross-sectional study of Dutch adolescents that online communication was positively related to time spent with friends and improved the quality of existing friendships, which was predictive of higher well-being.

Existing research suggests that children use online communication as an additional modality to enhance quality of existing friendships and that this is an effective strategy (see Chapters 4 and 5). Partly for this reason, several authors have suggested that those who communicate online more frequently also tend to feel more connected to their school environment (Ellison, Steinfield and Lampe, 2007[68]; Lee, 2009[66]), because they have friendships that are more cohesive. These findings broadly support the stimulation hypothesis and the rich-get-richer hypothesis, but some of the findings also suggest that the displacement hypothesis might be relevant for relationships that are less prioritised by adolescents. Since peer relationships tend to be prioritised over family relationships during teenage years, this would explain why time spent on online communication is associated with a decrease in family time but not in time spent with peers (Lee, 2009[66]).

There is also some support for a social compensation hypothesis; Peter and colleagues (2005[67]) found that introverted adolescents were more motivated to communicate online to compensate for lacking social skills, which increased their chances of making friends online. This might be particularly beneficial for those children who find it easier to self-disclose online compared to offline, which seems to be more common among boys than girls (Valkenburg and Peter, 2009[6]).

Also in support of the social compensation hypothesis, a meta-analysis of eight studies on Facebook use and loneliness found that people who feel lonelier tend to use Facebook more often (Song et al., 2014[72]), rather than Facebook use causing people to feel lonely. However, the estimate of the causal direction was based on path modelling of cross-sectional data, which means that the true causal direction is still unclear.

Taken together, the results from this review support the statement that the Internet and digital technology are not main effect causes of anything by themselves (McKenna and Bargh, 2000[73]; Peter, Valkenburg and Schouten, 2005[67]), but that it is the contextual and individual factors that influence social interaction and relationships. Valkenburg and Peter (2009[6]) conclude in their review of a decade of research on the social consequences of the Internet for adolescents that there has been a clear shift in research findings in this area; while early research from the 1990s tended to report that Internet use was detrimental to social interaction and relationships, recent studies tend to report mostly positive impacts, a conclusion also reached in a review by George and Odgers (2015[4]) and in Chapter 5.

Valkenburg and Peter (2009[6]) speculate that this has to do with changes in how adolescents used the Internet in the 1990s compared to today; while before it was difficult to use the Internet to maintain existing friendships since a great part of one's social network was not yet online, this is no longer the case today, with most young people now having access. This makes it more likely that digital technology will have positive impacts on friendships and social networks because a great deal of time spent online is spent on strengthening existing bonds between friends, or forming online ties or mixed-mode friendships, rather than isolating people in a lonely online space. Today's Internet users are far from lonely, which seems to explain the positive impacts of time spent using digital technology on children's social relationships (Valkenburg and Peter, 2009[6]).

Impact of time spent using digital technology on children's physical activity

Another aspect of children's lives that has received considerable attention under the displacement hypothesis is the relationship between time spent using digital technology and physical activity. Concerns have been raised that as time spent on digital technology increases, time spent on physical activity will be reduced, which might be a contributing factor to child and adolescent obesity and physical health problems (Kautiainen et al., 2005[74]). Iannotti and colleagues (2009[75]) drew on an older cross-sectional sample from the Health Behaviour in School-Aged Children (HBSC) survey implemented in 2000 in Canada and United States and found that an increase in screen time was associated with small reductions on several health indicators, such as physical health status, quality of life and family relationships.

Another cross-national study drawing on a cross-sectional sample of over 5 000 9-11 year-olds (LeBlanc et al., 2015[76]) found that an increase in screen time was associated with small reductions in physical activity and healthy diet. However, in both studies the effect sizes were small. Because of this, Iannotti and colleagues (2009[75]) conclude that interventions targeting screen time alone are unlikely to significantly increase time spent on physical activity. Leblanc and colleagues (2015[76]) suggest that although screen time is

an important aspect of sedentary behaviour, it would be beneficial to also consider the positive and negative effects of non-screen based sedentary behaviours in addition to screen time to gain a better understanding of their relative impacts.

The two studies cited above used aggregate estimates of screen time without considering the differences between digital devices, activities or content. This is a weakness that several authors acknowledge (e.g. Kautiainen et al. (2005[74]), Sisson et al. (2010[13]) and Straker et al. (2013[77])).

Straker and colleagues (2013[77]) showed empirically that different screen time activities relate differently to physical activity and health indicators. Their findings build on an early cross-sectional study with a representative sample of Finnish youth (14-18 years old) which found that only certain forms of technology were associated with higher obesity rates; television watching was associated with a small increase in the likelihood of being overweight for girls only, while playing digital games had no such effect (Kautiainen et al., 2005[74]). Kautiainen and colleagues (2005[74]) noted that when accounting for biological maturation and weekly physical activity, the statistical associations were weaker and non-significant for some age groups, which might suggest that it is the lack of physical activity rather than screen time that increases the risk of being overweight.

That digital technologies differ in their impact is corroborated by several cross-sectional studies included in this review; television viewing has been linked to a reduction in physical activity (e.g. Devís-Devís et al.(2012[78]) and Kimbro, Brooks-Gunn and McLanahan (2011[79])), while time spent with mobile phones was linked to reductions in physical activity in one study (Lepp et al., 2013[80]), but linked to an increase in physical activity in another, though only for weekday use (Devís-Devís et al., 2012[78]). Devís-Devís and colleagues (2012[78]) speculate that because mobile phones can be used while children are mobile or engaging in other activities, this could explain the increase in physical activity. Though few control variables were included in the analysis. These mixed results appear also in studies using aggregate screen time measures where differences in terms of activities or devices are not considered. Some studies find no association between screen time and physical activity (Laurson et al., 2014[81]) while others report a negative association (Sisson et al., 2010[13]).

A large cross-national study drawing on survey data from over 200 000 adolescents aged 11-15 years old found that the relationship between time spent using digital technology and leisure time physical activity seems to also differ depending on age, gender and nationality (Melkevik et al., 2010[82]). Broadly, the study found that spending two hours or more per day on screen-based activities resulted on average in half an hour less per week spent on leisure-type physical activity.

Again, the form of screen-based activity adolescents engaged in mattered for the outcome; regular computer use was associated with an increase in physical activity while gaming and watching television were associated with a decrease. However, these patterns were not stable across all countries; for example, in Eastern and Southern Europe, gaming, watching television and general computer use were associated with increases in spare time physical activity. The authors conclude that physical inactivity is unlikely to be a direct consequence of adolescents spending too much time on screen-based activities, but rather suggest that already inactive adolescents have more time to spend in front of screens.

This conclusion is supported by findings from a separate longitudinal study of 11-13 year-olds showing that increased engagement in computer use or video gaming was not directly associated with leisure time physical activity, indicating that screen-based activity

and physical activity should be addressed separately in health promotion activities (Gebremariam et al., 2013[83]). The authors suggest that other factors than computer use or gaming might better determine whether children spend more or less time on physical activity, and that the association between screen time and obesity found in some studies might be due to dietary behaviours rather than lack of physical activity. This claim was supported by a systematic review of studies on sedentary behaviour and dietary intake for children, adolescents and adults (Pearson and Biddle, 2011[84]).

In summary, evidence on the impact of time spent using digital technology on physical activity is mixed and inconclusive. While a number of longitudinal and cross-sectional studies have found a link between time spent using digital technology and reduced physical activity, other studies report no such associations. Explanations for reduced physical activity seem to depend on multiple factors beyond only the time spent on digital technology, some of which have yet to be examined.

However, researchers seem to broadly agree that the link between screen time and physical activity is unlikely to be direct; for example, Kimbro and colleagues (2011[79]) suggest that perceptions of neighbourhood safety and the residential environment (access to parks or playgrounds) might influence the time spent both on digital technology and physical activity. It has been suggested that indoor play offers a compelling alternative to outdoor play in less affluent neighbourhoods and in families where parents have less time available to supervise their children (Tandon et al., 2012[85]). This claim is supported by studies showing that individuals who live in more disadvantaged neighbourhoods tend to have less access to portable play equipment and report lower levels of physical activity and higher rates of obesity, but the causal nature of these relationships is unclear (Kimbro, Brooks-Gunn and McLanahan, 2011[79]; Tandon et al., 2012[85]).

The finding that screen-based activity and physical activity seem to be independent behaviours is particularly important to stress for health promotion policies; longitudinal data suggest that only reducing time spent with digital devices will not automatically increase time spent on physical activity (Gebremariam et al., 2013[83]). Rather, some authors argue that promoting physical activity independently may be a more useful strategy. This argument is supported by previous longitudinal studies on television viewing and physical activity in adolescence (Taveras et al., 2007[86]).

Discussion

Research on how digital technology affects children's well-being has been ongoing for almost two decades, with research conducted between 2005 and 2017 reviewed here. While some high quality studies are now emerging, research in this area still suffers from theoretical and methodological weaknesses that make the evidence collected so far unreliable and inconclusive. Four issues need to be addressed to produce more conclusive evidence:

- Many studies use aggregate screen time measures where the self-reported total time spent with screens per day or per week is used to predict well-being outcomes. The assumption that all screen time is equal has been criticised and it would be beneficial for future studies to measure the effects of specific instances of screen time separately, such as mobile phone use, video gaming or using social networking sites (e.g. Przybylski and Weinstein (2017[30])). This would also enable an examination of how the content of children's digital experiences influences the outcomes, providing necessary granularity to screen time research.

- There is a need for more longitudinal studies in this area. Cross-sectional research has been useful as a starting point for hypothesis-generation and initial theory-building, but to advance theory and arrive at firm conclusions we need longitudinal evidence that looks at how digital technology affects children over time. It is possible that digital technology may not have immediate positive or negative effects on children which could explain the small effect sizes found in some studies, but there may be cumulative outcomes for which we require long-term studies to be able to capture.
- Researchers can help to promote age- and context-specific policies by collecting data over time, from children of all age groups and from boys and girls, taking into account their life context and socio-demographics to the greatest extent possible (see Byrne et al.(2016[15]) or Livingstone (2016[45]) for a useful research framework). More background variables need to be included as controls in quantitative studies to ensure that we do not exclude variables that have known effects on child well-being outcomes. Children's online experiences cannot be studied in isolation from their lives in general. Qualitative data from children and parents could be particularly beneficial to understand the circumstances under which children's use of digital technology has positive or negative impacts on their lives. Qualitative data has an advantage in that it allows participants to express themselves freely, which can generate new knowledge and insights driven by children's own voices and experiences.
- The research community needs to strengthen reproducibility of research and the reliability of findings. Researchers may wish to register their hypotheses before collecting data and then share the raw data and analysis code attached to each publication, so that every policy-relevant research finding is produced in a transparent way, is computationally reproducible and freely accessible online (through the Open Science framework, for example). This would enable stakeholders to vet claims that are being made and enable transparent debate within the research community before evidence is used to inform policy or practice.

A final point concerns the role of media outlets, which ideally should provide evidence-based and balanced reporting on issues relating to children's use of digital technology. As George and Odgers (2015[4]) write in their review of fears around digital technology, media coverage can both capture as well as influence societal fears, which reinforces the importance of providing a nuanced picture. This is not easy to do given that evidence in this area is inconclusive and conflicting, which puts journalists in a difficult spot.

Even so, too many news articles share evidence from single studies or studies that are methodologically weak, or exaggerate or misrepresent the evidence provided. This can distract attention from more pressing issues for children, or lead to a situation where research and policy seek to address problems too quickly via interventions that have not been properly evaluated. This is not necessarily the fault of the media outlets or journalists - it also signals that there may be issues with respect to science communication by universities and research institutes.

One way to tackle this issue is to write press releases together with researchers, to ensure that both findings and study limitations are communicated properly. This requires researchers in turn to become more aware of the limitations of their studies and use appropriate descriptions for the research conducted when speaking to journalists; the distinction between exploratory hypothesis-generating research and confirmatory

hypothesis-testing research is critical. Cross-sectional data are too often used to test hypotheses that require longitudinal or experimental data, without the appropriate caveats in place. Such studies dilute the evidence base and contribute to confusion among researchers, media, policy makers and the public – more research is only a good thing when it is of sufficient quality. Going forward, journalists, editors and science communicators have a major role to play in ensuring that policy initiatives or interventions are based on high quality evidence.

Conclusions

As research on children's use of digital technology moves forward, an important challenge is to understand where to draw the line between healthy and harmful use, which is likely to require an individual approach where each child and their life context is considered separately. Although few negative impacts have been found in relation to the time children spend using digital technology, in order to maximise its positive impact, younger children may require provisions and support of a different nature than older children. Similarly, what is harmful for a very young child to see or do online may be largely unproblematic or even positive for an older child. In this respect, blanket-recommendations and policies are unlikely to be effective.

There is an unanswered question with respect to the activities that children's increased use of digital technology may be crowding out. Research on digital technology and children's well-being rarely asks whether other activities could have had some positive influences on the child if they were more regularly engaged in them. This relates to the displacement hypothesis mentioned previously. Although plenty of research has explored this hypothesis, the consequences of an increase in children's use of digital technology are rarely considered together with a decrease in other potentially beneficial activities.

More comprehensive, large-scale and longitudinal studies that look at children's time use in general are needed in order to be able to truly say whether the time spent using digital technology over time has a positive or negative influence on child well-being. These must consider the activities that may be crowded out, as it is not feasible to investigate the effects of digital technology in isolation from children's lives more broadly. Use of digital technology, as a multifaceted activity, needs to be compared to other activities that are part of children's lives before the trade-offs can be identified. These in turn will inform work towards achieving the best possible life balance for each individual child.

Adapting to the increased use of digital technology in society will require some adjustments in parenting, carrying out research and the development of policy, among other things. The current situation is unusual as children are in many ways the pioneers and experts in this area, often the first to try new apps and programmes, and sometimes even creating them on their own. To be able to effectively adjust to this situation and build constructive dialogues around healthy and harmful use of digital technology in the family, school, and society at large, there will likely be a need to rely more on children's voices and experiences.

Note

[1] A secondary aim of the original paper was to provide the reader with a critical overview of the hypothetical idea of addiction to technology. This paper only includes research on time use, while the original paper also included a separate section on digital technology and addiction.

References

AAP (2016), "Media and young minds", *Pediatrics*, Vol. 138/5, p. e20162591, http://dx.doi.org/10.1542/peds.2016-2591. [31]

AAP (1999), "Media education", *Pediatrics*, Vol. 104/2, pp. 341-343, https://pediatrics.aappublications.org/content/pediatrics/104/2/341.full.pdf. [29]

Aarseth, E. et al. (2016), "Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal", *Journal of Behavioral Addictions*, Vol. 6/3, pp. 267-270, http://dx.doi.org/10.1556/2006.5.2016.088. [42]

Anderson, M. (2016), *Parents, Teens and Digital Monitoring*, Pew Research Center, www.pewinternet.org/2016/01/07/parents-teens-and-digital-monitoring/. [10]

Banaji, S. (2016), *Global Research on Children's Online Experiences: Diversities and Inequalities*, Global Kids Online, http://globalkidsonline.net/tools/guides/inequalities/. [46]

Baranowski, T. et al. (2008), "Playing for real: Video games and stories for healt-related behavior change", *American Journal of Preventive Medicine*, Vol. 34/1, pp. 74-82, http://dx.doi.org/10.1016/j.amepre.2007.09.027. [16]

Bell, V., D. Bishop and A. Przybylski (2015), "The debate over digital technology and young people", *BMJ*, p. h3064, http://dx.doi.org/10.1136/bmj.h3064. [3]

Bezinović, P. et al. (2015), "Patterns of internet use and mental health of high school students in Istria County Croatia: Cross-sectional study", *Croatian medical journal*, Vol. 56/3, pp. 297-305, http://dx.doi.org/10.3325/CMJ.2015.56.297. [49]

boyd, D. (2014), *It's Complicated : The Social Lives of Networked Teens*, https://yalebooks.yale.edu/book/9780300199000/its-complicated. [7]

boyd, D. and E. Hargittai (2013), "Connected and concerned: Variation in parents' online safety concerns", *Policy & Internet*, Vol. 5/3, pp. 245-269, http://dx.doi.org/10.1002/1944-2866.POI332. [9]

Buckingham, D. and R. Willett (eds.) (2006), *Regulating the Internet at Home: Contrasting the Perspectives of Children and Parents*, Laurence Erlbaum Associates Inc. [5]

Burton, P., L. Leoschut and J. Phyfer (2016), *South African Kids Online: A Glimpse Into Children's Internet Use and Online Activities*, The Centre for Justice and Crime Prevention, Cape Town, www.cjcp.org.za. [26]

Byrne, J. et al. (2016), "Global kids online research synthesis, 2015-2016", *UNICEF and London School of Economics and Political Science*, www.unicef-irc.org/publications/869-global-kids-online-research-synthesis-2015-2016.html. [15]

Chapple, S. and D. Richardson (2010), *Doing Better for Children*, OECD Publishing, http://search.oecd.org/social/family/44453235.pdf. [27]

Charlton, J. and I. Danforth (2007), "Distinguishing addiction and high engagement in the context of online game playing", *Computers in Human Behavior*, Vol. 23/3, pp. 1531-1548, http://dx.doi.org/10.1016/J.CHB.2005.07.002. [33]

Chou, H. and N. Edge (2012), "'They are happier and having better lives than I am': The impact of using Facebook on perceptions of others' lives", *Cyberpsychology, Behavior, and Social Networking*, Vol. 15/2, pp. 117-121, http://dx.doi.org/10.1089/cyber.2011.0324. [62]

Cole, H. and M. Griffiths (2007), "Social interactions in massively multiplayer online role-playing gamers", *CyberPsychology & Behavior*, Vol. 10/4, pp. 575-583, http://dx.doi.org/10.1089/cpb.2007.9988. [18]

Cover, R. (2006), "Gaming (ad)diction: Discourse, identity, time and play in the production of the gamer addiction myth", *The International Journal of Computer Game Research*, Vol. 6/1, http://gamestudies.org/0601/articles/cover. [32]

Davis, K. (2013), "Young people's digital lives: The impact of interpersonal relationships and digital media use on adolescents' sense of identity", *Computers in Human Behavior*, Vol. 29/6, pp. 2281-2293, http://dx.doi.org/10.1016/j.chb.2013.05.022. [70]

Davis, K. (2012), "Friendship 2.0: Adolescents' experiences of belonging and self-disclosure online", *Journal of Adolescence*, Vol. 35/6, pp. 1527-1536, http://dx.doi.org/10.1016/j.adolescence.2012.02.013. [71]

Devís-Devís, J. et al. (2012), "Brief report: Association between socio-demographic factors, screen media usage and physical activity by type of day in Spanish adolescents", *Journal of Adolescence*, Vol. 35/1, pp. 213-218, http://dx.doi.org/10.1016/j.adolescence.2010.11.009. [78]

Dworak, M. et al. (2007), "Impact of singular excessive computer game and television exposure on sleep patterns and memory performance of school-aged children", *Pediatrics*, Vol. 120/5, pp. 978-985, http://dx.doi.org/10.1542/peds.2007-0476. [23]

Ellison, N., C. Steinfield and C. Lampe (2007), "The benefits of Facebook "friends:" Social capital and college students' use of online social network sites", *Journal of Computer-Mediated Communication*, Vol. 12/4, pp. 1143-1168, http://dx.doi.org/10.1111/j.1083-6101.2007.00367.x. [68]

Etchells, P. et al. (2017), *Screen time guidelines need to be built on evidence not hype*, www.theguardian.com/science/head-quarters/2017/jan/06/screen-time-guidelines-need-to-be-built-on-evidence-not-hype. [47]

Ferguson, C. (2017), "Everything in moderation: Moderate use of screens unassociated with child behavior problems", *Psychiatric Quarterly*, Vol. 88/4, pp. 797-805, http://dx.doi.org/10.1007/s11126-016-9486-3. [51]

Gebremariam, M. et al. (2013), "Are screen-based sedentary behaviors longitudinally associated with dietary behaviors and leisure-time physical activity in the transition into adolescence?", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 10/1, p. 9, http://dx.doi.org/10.1186/1479-5868-10-9. [83]

George, M. and C. Odgers (2015), "Seven fears and the science of how mobile technologies may be influencing adolescents in the digital age", *Perspectives on Psychological Science*, Vol. 10/6, pp. 832-851, http://dx.doi.org/10.1177/1745691615596788. [4]

Granic, I., A. Lobel and R. Engels (2014), "The benefits of playing video games.", *American Psychologist*, Vol. 69/1, pp. 66-78, http://dx.doi.org/10.1037/a0034857. [17]

Griffiths, L. et al. (2010), "Associations between sport and screen-entertainment with mental health problems in 5-year-old children", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 7/1, p. 30, http://dx.doi.org/10.1186/1479-5868-7-30. [54]

Griffiths, M. (2000), "Does Internet and computer 'Addiction' exist? Some case study evidence", *CyberPsychology & Behavior*, Vol. 3/2, pp. 211-218, http://dx.doi.org/10.1089/109493100316067. [39]

Griffiths, M. et al. (2016), "The evolution of Internet addiction: A global perspective", *Addictive Behaviors*, Vol. 53, pp. 193-195, http://dx.doi.org/10.1016/J.ADDBEH.2015.11.001. [41]

Hussain, Z. and M. Griffiths (2009), "The attitudes, feelings, and experiences of online gamers: A qualitative analysis", *CyberPsychology & Behavior*, Vol. 12/6, pp. 747-753, http://dx.doi.org/10.1089/cpb.2009.0059. [19]

Iannotti, R. et al. (2009), "Patterns of adolescent physical activity, screen-based media use, and positive and negative health indicators in the U.S. and Canada", *Journal of Adolescent Health*, Vol. 44/5, pp. 493-499, http://dx.doi.org/10.1016/j.jadohealth.2008.10.142. [75]

Ikeda, K. and K. Nakamura (2014), "Association between mobile phone use and depressed mood in Japanese adolescents: A cross-sectional study", *Environmental Health and Preventive Medicine*, Vol. 19/3, pp. 187-193, http://dx.doi.org/10.1007/s12199-013-0373-3. [50]

Jacobsen, W. and R. Forste (2011), "The wired generation: Academic and social outcomes of electronic media use among university students", *Cyberpsychology, Behavior, and Social Networking*, Vol. 14/5, pp. 275-280, http://dx.doi.org/10.1089/cyber.2010.0135. [69]

Kardefelt-Winther, D. (2014), *Excessive Internet Use: Fascination or Compulsion?*, London School of Economics and Political Science (LSE), http://etheses.lse.ac.uk/1062/. [34]

Kardefelt-Winther, D. et al. (2017), "How can we conceptualize behavioural addiction without pathologizing common behaviours?", *Addiction*, Vol. 112/10, pp. 1709-1715, http://dx.doi.org/10.1111/add.13763. [43]

Kautiainen, S. et al. (2005), "Use of information and communication technology and prevalence of overweight and obesity among adolescents", *International Journal of Obesity*, Vol. 29/8, pp. 925-933, http://dx.doi.org/10.1038/sj.ijo.0802994. [74]

Khan, K. et al. (2003), "Five steps to conducting a systematic review", *Journal of the Royal Society of Medicine*, Vol. 96/3, pp. 118-121, http://dx.doi.org/10.1177/014107680309600304. [44]

Kimbro, R., J. Brooks-Gunn and S. McLanahan (2011), "Young children in urban areas: Links among neighborhood characteristics, weight status, outdoor play, and television watching", *Social Science & Medicine*, Vol. 72/5, pp. 668-676, http://dx.doi.org/10.1016/j.socscimed.2010.12.015. [79]

Kim, J. et al. (2010), "Brief report: Predictors of heavy Internet use and associations with health-promoting and health risk behaviors among Hong Kong university students", *Journal of Adolescence*, Vol. 33/1, pp. 215-220, http://dx.doi.org/10.1016/j.adolescence.2009.03.012. [11]

Kraut, R. et al. (2002), "Internet paradox revisited", *Journal of Social Issues*, Vol. 58/1, pp. 49-74, http://dx.doi.org/10.1111/1540-4560.00248. [64]

Kraut, R. et al. (1998), "Internet paradox. A social technology that reduces social involvement and psychological well-being?", *The American Psychologist*, Vol. 53/9, pp. 1017-31, www.ncbi.nlm.nih.gov/pubmed/9841579. [63]

Larkin, M. and M. Griffiths (1998), "Response to Shaffer (1996): The case for a 'complex systems' conceptualisation of addiction", *Journal of Gambling Studies*, Vol. 14/1, pp. 73-82, http://dx.doi.org/10.1023/A:1023050609939. [35]

Laurson, K. et al. (2014), "Concurrent associations between physical activity, screen time, and sleep duration with childhood obesity", *ISRN Obesity*, Vol. 2014, pp. 1-6, http://dx.doi.org/10.1155/2014/204540. [81]

LeBlanc, A. et al. (2015), "Correlates of total sedentary time and screen time in 9–11 year-old children around the world: The international study of childhood obesity, lifestyle and the environment", *PLOS ONE*, Vol. 10/6, p. e0129622, http://dx.doi.org/10.1371/journal.pone.0129622. [76]

Lee, S. (2009), "Online communication and adolescent social ties: Who benefits more from Internet use?", *Journal of Computer-Mediated Communication*, Vol. 14/3, pp. 509-531, http://dx.doi.org/10.1111/j.1083-6101.2009.01451.x. [66]

Lepp, A. et al. (2013), "The relationship between cell phone use, physical and sedentary activity, and cardiorespiratory fitness in a sample of U.S. college students", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 10/1, p. 79, http://dx.doi.org/10.1186/1479-5868-10-79. [80]

Livingstone, S. (2016), "A framework for researching Global Kids Online: Understanding children's well-being and rights in the digital age", http://eprints.lse.ac.uk/71254/. [45]

Livingstone, S. and K. Drotner (2008), *International Handbook of Children, Media and Culture*, SAGE, https://uk.sagepub.com/en-gb/eur/international-handbook-of-children-media-and-culture/book229723. [24]

Livingstone, S. et al. (2011), "Risks and safety on the Internet: The perspective of European children: Full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries", http://eprints.lse.ac.uk/33731/. [14]

Lowood, H. (2008), *Found Technology: Players as Innovators in the Making of Machinima*, The MIT Press. [21]

Madden, M. et al. (2012), *Parents, Teens, and Online Privacy*, Pew Research Center, www.pewinternet.org/2012/11/20/parents-teens-and-online-privacy/. [8]

Marks, I. (1990), "Behavioural (non-chemical) addictions", *Addiction*, Vol. 85/11, pp. 1389-1394, http://dx.doi.org/10.1111/j.1360-0443.1990.tb01618.x. [37]

Marlatt, G. et al. (1988), "Addictive behaviors: Etiology and treatment", *Annual Review of Psychology*, Vol. 39/1, pp. 223-252, http://dx.doi.org/10.1146/annurev.ps.39.020188.001255. [36]

Mcdool, E. et al. (2016), *Social Media Use and Children's Wellbeing*, http://www.iza.org. [59]

McKenna, K. and J. Bargh (2000), "Plan 9 from Cyberspace: The implications of the Internet for personality and social psychology", *Personality and Social Psychology Review*, Vol. 4/1, pp. 57-75, http://dx.doi.org/10.1207/s15327957pspr0401_6. [73]

McKenna, K., A. Green and M. Gleason (2002), "Relationship formation on the Internet: What's the big attraction?", *Journal of Social Issues*, Vol. 58/1, pp. 9-31, http://dx.doi.org/10.1111/1540-4560.00246. [65]

Melkevik, O. et al. (2010), "Is spending time in screen-based sedentary behaviors associated with less physical activity: A cross national investigation", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 7/1, p. 46, http://dx.doi.org/10.1186/1479-5868-7-46. [82]

Munafò, M. et al. (2017), "A manifesto for reproducible science", *Nature Human Behaviour*, Vol. 1/1, p. 0021, http://dx.doi.org/10.1038/s41562-016-0021. [48]

Neuman, S. (1988), "The Displacement Effect: Assessing the relation between television viewing and reading performance", *Reading Research Quarterly*, Vol. 23/4, p. 414, http://dx.doi.org/10.2307/747641. [28]

OECD (2011), *Society at a Glance 2011: OECD Social Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/soc_glance-2011-en. [56]

Orben, A. and A. Przybylski (2019), "The association between adolescent well-being and digital technology use", *Nature Human Behaviour*, Vol. 3/2, pp. 173-182, http://dx.doi.org/10.1038/s41562-018-0506-1. [53]

Parkes, A. et al. (2013), "Do television and electronic games predict children's psychosocial adjustment? Longitudinal research using the UK Millennium Cohort Study", *Archives of Disease in Childhood*, Vol. 98/5, pp. 341-348, http://dx.doi.org/10.1136/archdischild-2011-301508. [57]

Pearson, N. and S. Biddle (2011), "Sedentary behavior and dietary intake in children, adolescents, and adults", *American Journal of Preventive Medicine*, Vol. 41/2, pp. 178-188, http://dx.doi.org/10.1016/j.amepre.2011.05.002. [84]

Peter, J., P. Valkenburg and A. Schouten (2005), "Developing a model of adolescent friendship formation on the Internet", *CyberPsychology & Behavior*, Vol. 8/5, pp. 423-430, http://dx.doi.org/10.1089/cpb.2005.8.423. [67]

Petry, N. et al. (2014), "Internet Gaming Disorder in the DSM-5", *Current Psychiatry Reports*, Vol. 17/9, p. 72, http://dx.doi.org/10.1007/s11920-015-0610-0. [38]

Plowman, L. and J. McPake (2013), "Seven Myths About Young Children and Technology", *Childhood Education*, Vol. 89/1, pp. 27-33, http://dx.doi.org/10.1080/00094056.2013.757490. [55]

Przybylski, A. (2014), "Electronic gaming and psychosocial adjustment", *Pediatrics*, Vol. 134/3, pp. e716-e722, http://dx.doi.org/10.1542/peds.2013-4021. [58]

Przybylski, A. and N. Weinstein (2017), "A large-scale test of the Goldilocks Hypothesis", *Psychological Science*, Vol. 28/2, pp. 204-215, http://dx.doi.org/10.1177/0956797616678438. [30]

Putnam, R. (2000), "Bowling alone", *Proceedings of the 2000 ACM conference on Computer supported cooperative work - CSCW '00*, http://dx.doi.org/10.1145/358916.361990. [1]

Raine, K., M. Frans and S. Jaakko (eds.) (2012), *Domesticating Play, Designing Everyday Life: The Practice and Performance of Family Gender, and Gaming*, University of Tampere. [22]

Selfhout, M. et al. (2009), "Different types of Internet use, depression, and social anxiety: The role of perceived friendship quality", *Journal of Adolescence*, Vol. 32/4, pp. 819-833, http://dx.doi.org/10.1016/j.adolescence.2008.10.011. [52]

Sisson, S. et al. (2010), "Screen time, physical activity, and overweight in U.S. Youth: National survey of children's health 2003", *Journal of Adolescent Health*, Vol. 47/3, pp. 309-311, http://dx.doi.org/10.1016/j.jadohealth.2010.02.016. [13]

Song, H. et al. (2014), "Does Facebook make you lonely?: A meta analysis", *Computers in Human Behavior*, Vol. 36, pp. 446-452, http://dx.doi.org/10.1016/j.chb.2014.04.011. [72]

Statens medieråd (2015), *Föräldrar Och Medier 2015*, www.statensmedierad.se/publikationer/ungarochmedier/foraldrarochmedier2015.281.html. [25]

Straker, L. et al. (2013), "Screen-based media use clusters are related to other activity behaviours and health indicators in adolescents", *BMC Public Health*, Vol. 13/1, http://dx.doi.org/10.1186/1471-2458-13-1174. [77]

Sueur, C. (ed.) (2013), "Facebook use predicts declines in subjective well-being in young adults", *PLoS ONE*, Vol. 8/8, p. e69841, http://dx.doi.org/10.1371/journal.pone.0069841. [61]

Tandon, P. et al. (2012), "Home environment relationships with children's physical activity, sedentary time, and screen time by socioeconomic status", *International Journal of Behavioral Nutrition and Physical Activity*, Vol. 9/1, p. 88, http://dx.doi.org/10.1186/1479-5868-9-88. [85]

Taveras, E. et al. (2007), "Longitudinal relationship between television viewing and leisure-time physical activity during adolescence", *Pediatrics*, Vol. 119/2, pp. e314-e319, http://dx.doi.org/10.1542/peds.2005-2974. [86]

Turkle, S. (2011), *Alone Together: Why We Expect More From Technology and Less From Each Other*, New York, Basics Books, www.basicbooks.com/titles/sherry-turkle/alone-together/9780465093656/. [2]

Valkenburg, P. and J. Peter (2009), "Social consequences of the Internet for adolescents", *Current Directions in Psychological Science*, Vol. 18/1, pp. 1-5, http://dx.doi.org/10.1111/j.1467-8721.2009.01595.x. [6]

Valkenburg, P. and J. Peter (2007), "Online communication and adolescent well-being: Testing the Stimulation versus the Displacement Hypothesis", *Journal of Computer-Mediated Communication*, Vol. 12/4, pp. 1169-1182, http://dx.doi.org/10.1111/j.1083-6101.2007.00368.x. [20]

Van Rooij, A. and N. Prause (2014), "A critical review of "Internet addiction" criteria with suggestions for the future", *Journal of Behavioral Addictions*, Vol. 3/4, pp. 203-213, http://dx.doi.org/10.1556/JBA.3.2014.4.1. [40]

Verduyn, P. et al. (2015), "Passive Facebook usage undermines affective well-being: Experimental and longitudinal evidence", *Journal of Experimental Psychology: General*, Vol. 144/2, pp. 480-488, http://dx.doi.org/10.1037/xge0000057. [60]

Young, K. (1996), "Psychology of computer use: XL. Addictive use of the Internet: A case that breaks the stereotype", *Psychological Reports*, Vol. 79/3, pp. 899-902, http://dx.doi.org/10.2466/pr0.1996.79.3.899. [12]

Chapter 9. Youth inequalities in digital interactions and well-being

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This chapter focuses on examining disparities of digital outcomes against the backdrop of social inequalities. In particular, it explores how information and communications technology (ICT) access, skills and uses relate to different socio-cultural and well-being outcomes. Well-being is referred to widely in research and public discourse though its definition and components are debated. In this chapter, it is used to describe the positive outcomes related to civic and social participation and leisure pursuits. Inequalities for young people are examined from all socio-economic backgrounds but highlight the experiences of the most disadvantaged – young people not in employment, education, or training (NEET). This chapter is of interest to those who seek to better understand how the digitisation of everyday life might exacerbate existing patterns of disadvantage as well as those looking for ways to ameliorate inequalities.

Digital inequalities

The literature on digital inequalities has developed over the last decade, becoming increasingly nuanced and multi-layered. Initially treated simply as an issue of individual access, researchers have gradually distinguished three interlinked levels of digital inequalities, or divides (Tsatsou, 2011[1]; Van Deursen and Helsper, 2015[2]), all of which will be considered here. At *the first level*, some individuals are disadvantaged by limited access to digital devices and infrastructure. At the *second level,* digital inequalities arise due to limited information and communications technology (ICT) skills and uses. Here, researchers distinguish technical-operational, critical information-navigation, social-communicative and content creation skills (Helsper and Van Deursen, 2018[3]; Van Deursen, Helsper and Eynon, 2015[4]).

In this chapter, we move beyond the 'harder' technical and navigation skills and incorporate the 'softer' skills, such as those related to content creation, participation and social interaction that have been less explored in the literature but are vital for social and personal well-being. In doing so we capture skills that are less likely to be formally taught to young people but which amongst adults have shown to be important for avoiding negative outcomes in everyday life (Van Deursen et al., 2017[5]). For example, knowing how and where to find health-related information without understanding why a vlogger, friend or family member might share a specific piece of health advice could lead one to trust information that should be looked at more critically. The uses of ICTs at the second level are roughly grouped into information seeking, entertainment, financial or economic, communication, political or civic engagement, and identity motivated activities (Cho et al., 2003[6]; Eastin, Cicchirillo and Mabry, 2015[7]; Opgenhaffen and d'Haenens, 2012[8]). Motivations to engage with or attitudes towards technology are sometimes included as part of the first level inequalities (Van Dijk, 2005[9]), and in other work as part of the second level (Van Deursen and Van Dijk, 2015[10]).

The *third level of digital inequalities* is in the outcomes of ICT use (Nie, Sousa-Poza and Nimrod, 2016[11]; Wei et al., 2011[12]; Van Deursen and Helsper, 2015[2]). That is, the differences in the positive and negative outcomes individuals achieve from undertaking online activities. For example, while making new connections online is more likely to result in extended networks with access to valuable resources for some (see Chapter 5), others may experience higher levels of harassment and bullying.

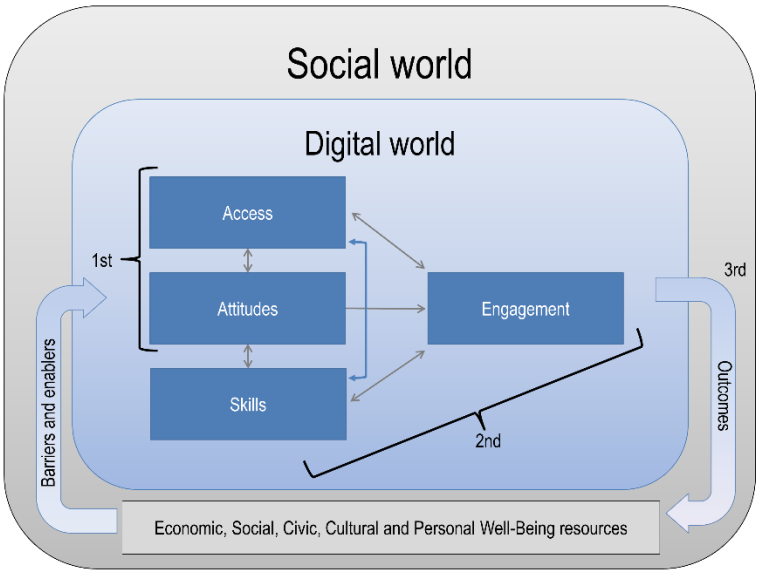
The three levels are interrelated; one way in which this is the case is that a range of skills is needed to translate use into beneficial outcomes and avoid negative ones. Thus, inequalities in skills result in inequalities in outcomes. For example, engaging in positive social interactions online requires understanding the settings of different platforms (operational skills), being able to find and interpret the content shared by other people about themselves and others online (information-navigational skills), knowing how to interact, with whom, and on which platforms (social-communicative skills), and building an attractive and engaging personal profile that reaches the right audience or contacts (content creation skills).

The conceptual model used in this chapter is presented in Figure 9.1

In summary, digital inclusion is defined as being able to translate ICT access, skills and use into beneficial outcomes in everyday life. The term socio-digital inequalities refers to systematic differences in digital inclusion between young people from different socio-economic and socio-cultural backgrounds. In this chapter, the focus is on inequalities in the opportunities and abilities to achieve social, cultural and personal well-being

outcomes in particular, leaving aside the economic and education outcomes extensively debated in other literature (e.g. Wei et al. (2011[12])).

Figure 9.1. Framework for thinking about the links between social and digital inequalities



Digital natives?

The relationships between the three levels of digital inequalities and socio-economic and socio-cultural inequalities have been explored in depth for adults. However, it is only recently that policy makers have become concerned about and researchers have started to understand how these work for younger generations. Some of this is the legacy of the now debunked idea of the digital native, a term coined and since adjusted (Prensky, 2001[13]; Prensky and Sapiens, 2009[14]). This idea, or rather, the way in which it was interpreted, meant that young people were seen as innately and effortlessly capable of using ICTs, simply because they grew up surrounded by and immersed in digital technologies. Research has shown that age in itself does not determine the level of skill and breadth of use of a person. Rather it is one's socio-economic and socio-cultural circumstances as well as one's experience with (rather than exposure to) technology that determines whether one is digitally included (Bennett, Maton and Kervin, 2008[15]; Helsper and Eynon, 2010[16]; Jones and Czerniewicz, 2010[17]). This means that there is likely to be as much variation in engagement with ICTs between young people based on systematic inequalities as there is between older individuals.

Thus, the question that this chapter will answer is whether disadvantaged youth are or are not achieving the same social and well-being outcomes as their more advantaged peers, taking into consideration the socio-digital environments in which they live, their skills and the ways in which they use ICTs.[1]

One of the most socio-economically vulnerable groups of young people are those not in education, employment or training (NEETs). As of December 2018, 788 000 young people (ages 16-26), or 11.3% of all youth, in the United Kingdom were categorised as NEET, which is higher than the OECD average (Office for National Statistics, 2019[18]). NEETs suffer from diverse disadvantages, including exclusion from educational, social and healthcare settings. NEETs "feel marginalised and perceive themselves to be viewed

negatively by formal and traditional structures (civic and community)" (Buchanan and Tuckerman, 2016, p. 529[19]). This is due to overwhelmingly negative everyday life experiences, such as restricted access (e.g. inability to enter a store or commute on public transport as a group), heightened surveillance, bullying, disregard in academic environments and societal segregation (Miller et al., 2015[20]; Russell, Simmons and Thompson, 2011[21]; Simmons and Thompson, 2011[22]; Thornham and Gómez Cruz, 2016[23]).

Socio-digital ecologies of disadvantaged young people

While the generalisation of all youth as digital natives is contested (Prensky and Sapiens, 2009[14]), it is not contested that youth's experience with and exposure to (others' use of) ICTs at a young age shapes their perceptions and uses of ICTs (Helsper, 2017[24]; Livingstone, 2003[25]; Robinson and Schulz, 2013[26]). Thus, to understand how and why technologies are and are not used, it is important to understand the environments in which disadvantaged youths live. These socio-digital ecologies are looked at here through the access that youth have to digital devices and the people that they learn from and rely on for ICT-related support.[2]

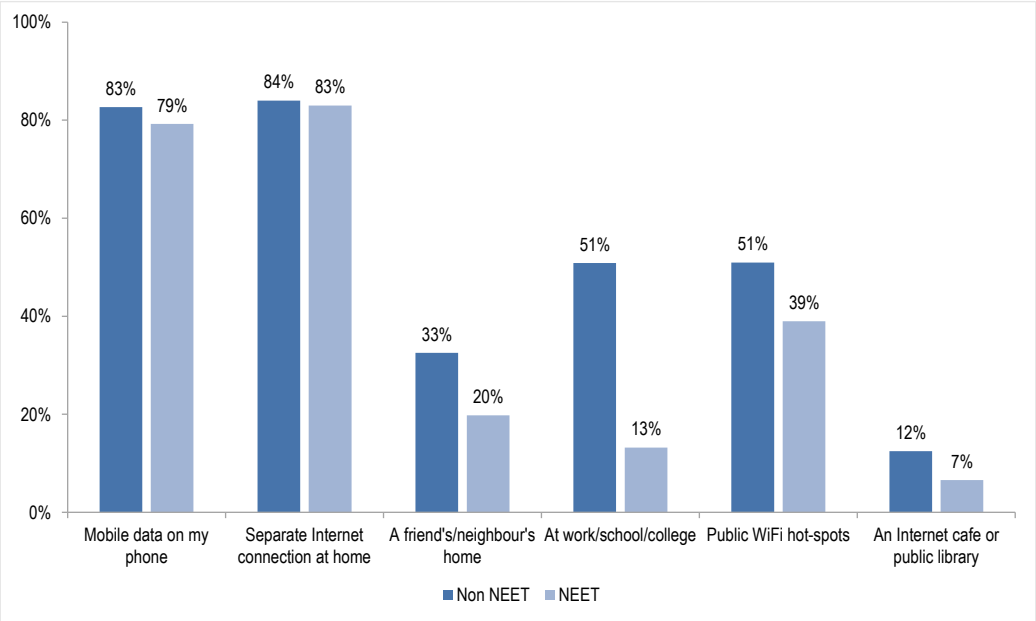
Access

The UK-wide survey[3] conducted for this study suggests that connectivity is high; almost all young people (9 in 10), including the most marginalised, had access to smartphones (see Figure 9.2).

Nevertheless, this does not mean that all young people access the Internet equally with their devices. Logically, NEETs are less likely to access the Internet at work or school but they also access it less at friends' homes, Wi-Fi hotspots, Internet cafés and public libraries. This is especially worrying because conducted focus groups[4] uncovered challenges faced by NEETs in particular in terms of the continuity and quality of their connectivity at these different locations. Digital connectivity was discontinuous since Wi-Fi connections did not always work at home and their (often) limited data plans did not meet their needs. Thus, NEETs tended to seek better connectivity in creative ways, including scouting access points in public libraries, their friends' homes, public hotspots and Prince's Trust (an NGO that works with marginalised youth in the United Kingdom) locations.

For example: "I'm *that* guy that'll walk into your house with the... do you have Wi-Fi?" or "half the time I'm already on it [friend's Wi-Fi], so it'll be just like, sneak outside their house, and just *sat on their wall* for five minutes."[5] The element of disempowerment and embarrassment – i.e. "being *that* guy," "*sat on their wall*"– was painfully obvious in such accounts. The low quality of devices was also reported as an issue; on multiple occasions young people reported their devices being fully or partially (e.g. a smashed screen) broken. When devices were no longer functional, they relied on their friends and family to give or lend them a new device. For example, "I actually got given my phone as a gift when I left my old foster home. They gave me a gift and they said like, here you go, we know that you wanted a phone for ages so they got me a nice phone so I was like, right, that's cool."

Figure 9.2. Location of access by work status: In the last month, how did you connect to the Internet?



Note: All young people (N=1026 Non-NEETs and N=318 NEETs). NEET status was defined as currently not being in education, employment or training, and these young people were compared with those who were in either employment or training.

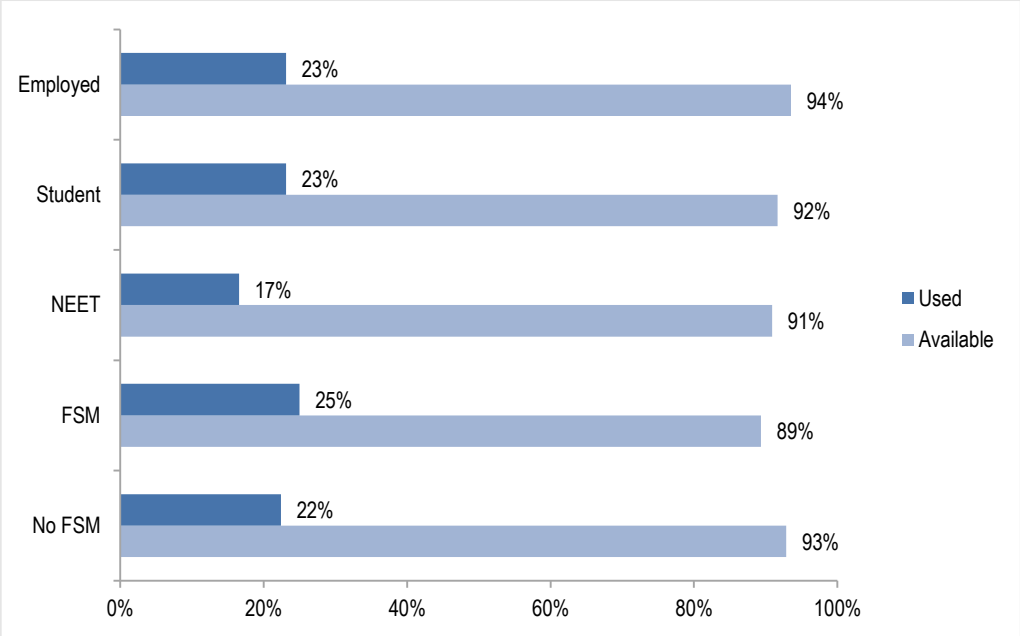
Having to use semi-broken devices clearly limits functionalities available to young people and, in the light of limited financial power, having to count on others to replace a device leads to frequent interruptions of access for an undetermined amount of time. Another issue that arose was that of privacy. On many occasions "personal" laptops, tablets and computers were shared among family members, including siblings and friends, which led to surveillance of activities, conflict over use and limited access.

Networks of support

Support networks are important because they enable both technical (i.e. how to do things) and normative (i.e. why certain activities are or are not valuable) learning.

Figure 9.3 shows that there are significant differences in support available and offered to NEETs in comparison to other socio-demographic groups. NEETs are both less likely to have support available to them (9% of NEETs had no support available in comparison to 6% of non-NEETs) and are less likely to have asked someone to assist them (17% of NEETs and 23% of non-NEETs asked). We can nonetheless distinguish two types of support, formal and informal. Formal support relies on expert, often distant others such as help desks, librarians, online and support services. Informal support is less professional and describes family and friends, who in the case of disadvantaged youth are more available for assistance in the immediate environment.

Figure 9.3. Availability and use of support in ICT-related issues



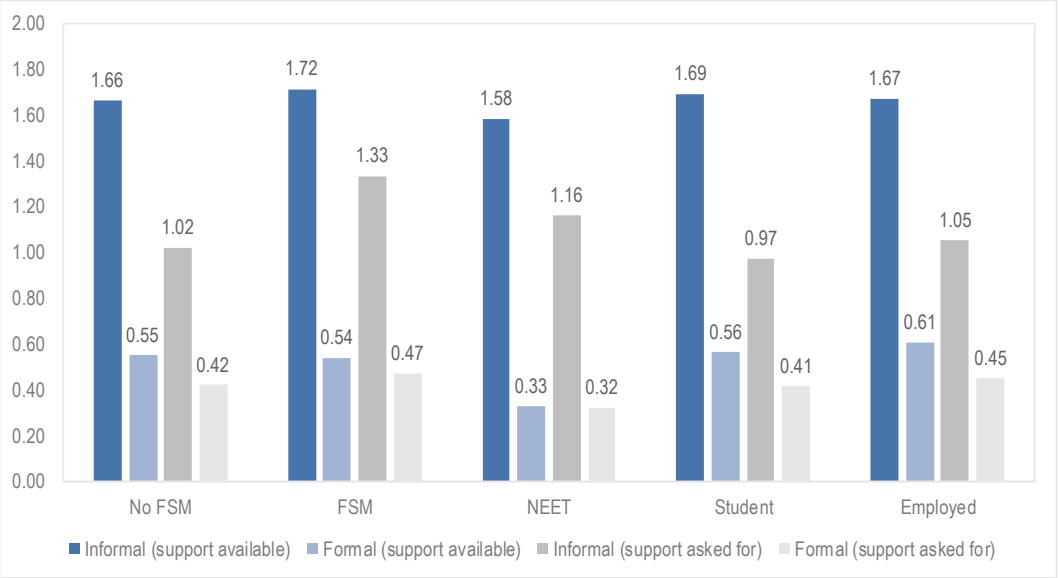
Note: All young people (N=1026 Non-NEETs and N=318 NEETs) FSM = free school meals. Entitlement to free school meals is part of a social assistance programme for those families receiving income support from the UK government; here it is used as a proxy for a history of poverty

Young people in general rely more on informal than formal networks of support (see Figure 9.4). However, while NEETs had a narrower range of informal and formal support networks available, when they did ask for help, they asked a wider range of individuals in their informal networks for support. The same was true for those with a history of poverty (i.e. who had received free school meals). It is important to note that all of these support sources were the second point of call for both NEETs and non-NEETs, well behind trying to figure it out yourself and searching online.

The focus groups support this and provide further insight, for example, NEETs mainly sought help with practical, technical issues (i.e. how to undertake a specific task or troubleshoot a technical issue). This is important because seeking practical help did not translate into discussions around broader issues such as online safety and content production. For example, NEETs discussed learning how to use a Print-screen function or how to block a specific user on a social media site, but these lessons were not seen as transferable to other platforms or useful to engage in positive interactions.

The same occurred when roles were reversed, when NEETs offered somebody support it was technical (e.g. when parents "get stuck" with their phones). Even in situations where NEETs felt that close others might be violating codes of digital engagement, they were not likely to see it as an educational opportunity. Consider, for example, the case of a young woman who reported being "livid" after her father uploaded a video of her 6-year-old sister singing in her underwear onto an open social media profile. Others echoed similar stories about younger children and parents posting pictures of bath times, but even though NEETs recognised this was not appropriate, they did not take any action to instruct their parents or peers on these matters.

Figure 9.4. Type of support available (a) and type of support used (b) by young people



Note a): All young people who had support available (N=952 Non-NEETs and N=289 NEETs).
Note b): All young people who had asked for help/used the support network (N=246 Non-NEETs and N=50 NEETs).

During our conversations with NEETs, we realised that there was a lack of recognition of sources of support. For example, course-leaders who delivered training courses, involving, but not centring on ICT skills (e.g. robot building, which clearly involve learning ICT skills), were seen by NEETs as content providers, rather than potential sources of technical expertise. Probably for the same reason, teachers were not mentioned as support sources. At the same time, a quarter of NEETs reported seeking help from both helpdesks and online platforms, including Google and YouTube, thus overlooking expertise that is available to them in their direct environment. Our analysis of what NEETs shared in the focus groups suggested a widely held belief that ICT skills are not something that is learned. They described their skill acquisition as follows: "I mean, it's not rocket science, it's something I'm going to figure it out," and "you're just like born to it." In many ways, this echoes the debunked idea of the digital native: the presumption that young people naturally acquire ICT skills through immersion rather than by learning.

Literacy

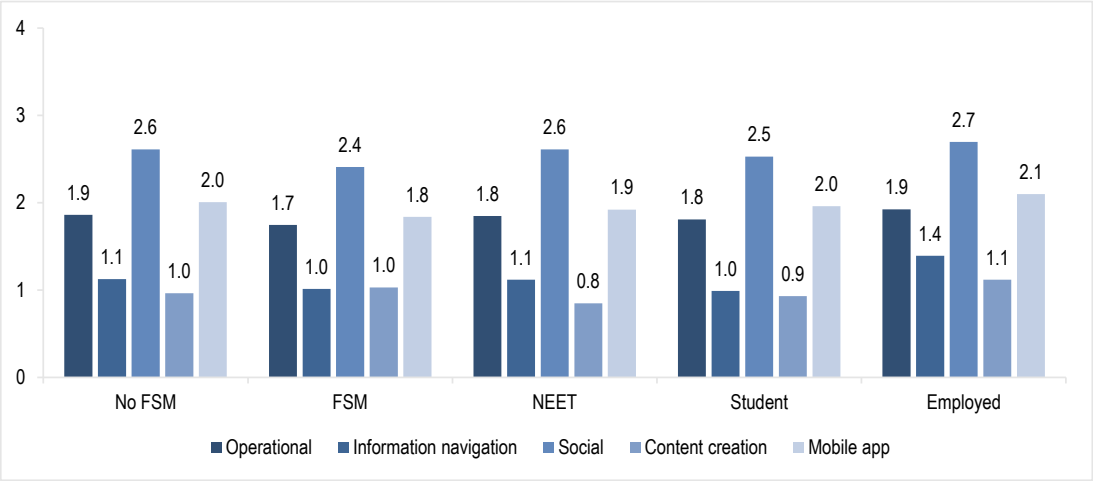
Literacy is a broader term that involves the ability to find, interpret and produce digital content and engage in interactions online. Distinctions can be made between skills, self-confidence and the uses made of ICTs.[6]

Skills

As discussed in the introduction, there are multiple classifications for ICT skills. Here, we distinguish technical-operational, information-navigation, social-communicative, content creation and mobile/protection skills. The survey measures used have been extensively tested and validated in different contexts and for different socio-demographic groups (Van Deursen, Helsper and Eynon, 2015[4]). There were 17 items capturing different types of skills young people have developed (see Helsper and Smirnova (2016[27])). All five skills

measures are composite scales counting the number of times a young person indicates having the highest level of skill for each of the items that make up the scale. For every "very true of me" response[7] – the highest skill level – a respondent would get 1 point. The overall skill level consists of the sum of scores of the items in the skill category.

Figure 9.5. High skill levels



Note: All young people (N=1026 Non-NEETs and N=318 NEETs).

Like young people in general, NEETs were the least skilled when it came to content creation skills and the highest levels were obtained for social and communicative skills. The difference in skill levels between those who were currently and historically disadvantaged, and those who were not, were not significant except for information-navigation skills where employed youth had higher skill levels than others (including students). While it is positive that disadvantaged youth did not feel more or less threatened by ICTs than their peers, this might lead them to ignore things they have yet to master, or prevent them from seeking or being offered further learning opportunities.

Information-navigation

The focus groups underlined the risk of overestimating one's skills, particularly when it came to information-navigation skills. For example, one NEET explained that he approaches YouTube without a search strategy and watches content that is algorithmically presented to him without questioning why it appeared: "Sometimes it's advertising. Games. Music, games, whatever you want, they've got a little bar outside for games." This led to being taken to content that was not requested, getting "lost" in digital space, and not being able to find desired information.

NEETs welcomed the possibilities the digital world brings, often failing to take a critical stance towards and overlooking societal factors that shape digital spaces. While this is a more common problem amongst youth, it is especially problematic because algorithms and design are more likely to be biased against the most vulnerable in society (Ransbotham et al., 2016[28]; Williams, Brooks and Shmargad, 2018[29]).

NEETs were relatively satisfied with what they were able to do, and when things went wrong they did not attribute this to their own skill but to technological failures or the people on the platform. However, some limitations, especially in their information-navigation

skills, did not go unnoticed by NEETs. For example, one of the focus group participants describes and evaluates his friend's digital practice, noting, "she'll open one [browser] and then she can't be bothered to like go into that one and so she'll open another. See the thing is, when you have really slow Internet, and someone does that, it's really not helpful, like somebody else like just opened up 50". Other participants told stories of medical self-diagnoses by Googling syndromes and being diagnosed with "the worst case scenario", such as lung cancer. In these instances, they did not uncritically adopt the common practice, but got frustrated because their strategies did not yield actionable results and they did not know where to go or what to do to be more effective.

Of course, this is not just a problem for disadvantaged youth. However, exclusion from educational, employment and professional service contexts such as the health system puts them in a more disadvantaged position since it reduces the number of expert and reliable sources that can help with acquisition and external validation of knowledge, such as expert colleagues, family members, medical professionals or teachers.

Social-communicative skills

As with the discussions around information seeking strategies, discussions around netiquette (i.e. social skills; what you should or should not do online, how to avoid unpleasant encounters or how to deal with the aftermath) revealed how offline social contexts shape young people's knowledge and skills and that softer skills are especially necessary for positive socialising. Social-communicative skills in particular were perceived by youth as naturally acquired rather than learned.

NEETs reported only accepting friend requests from people they knew and declining those they did not, a recommendation in many online safety guidebooks. One of the participants described one such encounter: "[…] I've had people from Africa send me messages like, hey I know we're not friends, but you look lovely so let's talk and I'm like, go away. How did you even find my profile?" When similar situations with more familiar others occurred, NEETs faced the dilemma of managing their online presence. For example, being contacted by a distant cousin or a person from work (i.e. "older", "a bit creepy"), NEETs reported frustration and awkwardness but did not take action nor indicate going somewhere for help on how to deal with these situations.

When dealing with online situations, NEETs tend to use short-term, passive strategies, with doing nothing as the preferred option. This echoes the lack of agency and power that NEETs have experienced throughout their lifetime when confronted with official institutions (e.g. schools), powerful others (e.g. employers), and in informal relations with those who are better off (e.g. family members without histories of poverty). Often such encounters are experienced with estrangement and awkwardness, and with resignation that this is just the way it is and they have to accept it.

In the digital world, this idea of disempowerment affects the quality of social interaction in which NEETs engage. The stories young people relayed included aggressive comments towards family members, incidents of malicious gossip, social media profile hacking or exposure to undesirable content. They reported their emotional responses – being sad, frustrated, angry, confused – but actions taken were mostly post hoc rather than preventative such as asking for help from parents, and blocking or ignoring people whose behaviour disturbed them. Proactive strategies or actions that might prevent similar negative experiences from occurring in the future were very rarely mentioned.

Content creation skills

The biggest issue regarding content creation skills, for NEETs and non-NEETs alike, was that this set of skills was not well-integrated into teaching curricula nor was formal training seen as useful in everyday life (see Chapter 13). Participants described school and extracurricular training (e.g. robotics, IT skill courses) as irrelevant to their everyday lives with no concrete examples of anyone they knew who had applied those in practical ways (e.g. getting a job, making something useful for friends or family). One NEET who was an expert gamer and knew some programming did not really see this as a career. "I won't mind being a game master. Or make my own games, but... Then I'd rather work on cars all the time […] I'd drop gaming in a heartbeat to work for... you know, mechanical stuff and stuff like that."

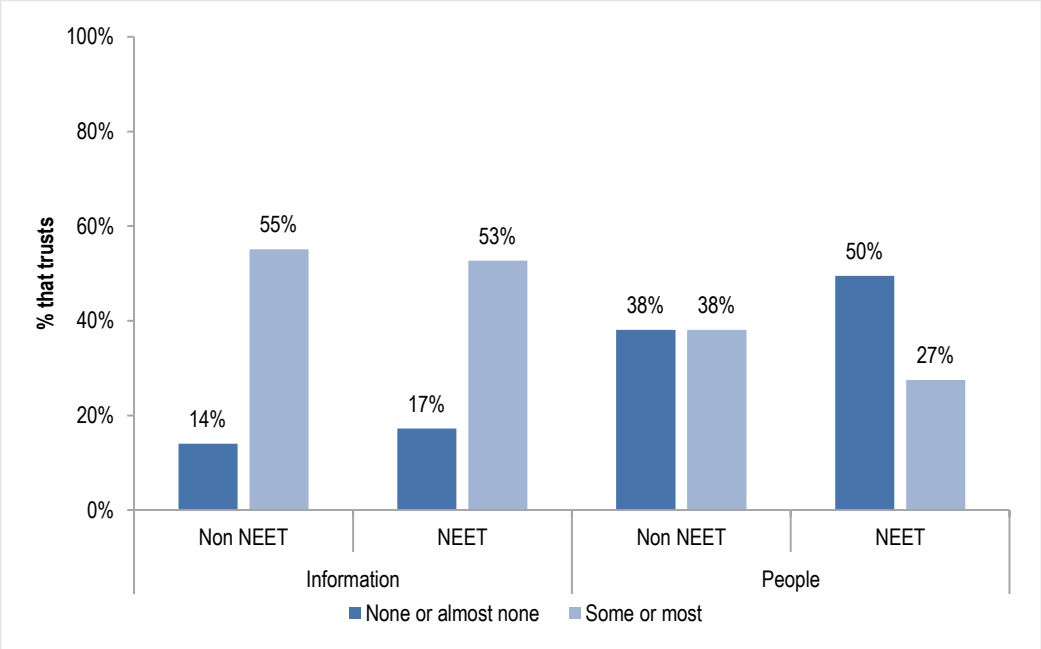
When it comes to more complex issues, such as licensing and owning online content, NEETs used formal language circulating in public discourse (e.g. copyright infringement, identity theft, corporate ownership), linking this to big business and advertising, but they did not demonstrate an understanding of how this might relate to content or products generated by users like them. One NEET created glasswork and occasionally sold it to others: "yes, to friends…I sold four coasters. I [make] owls and they went to an art person and they actually really liked them. They went for about £45". However, in the discussion that followed, he had problems understanding why setting up a profile/site and promoting his work online and on different platforms could lead to tangible benefits such as broader recognition and sales of his work.

Confidence in self and others

Besides concrete skills, the survey also measured digital self-efficacy or confidence that youth had in their own abilities, because this has been shown to be an important driver of digital engagement, more so even than actual skills (Eastin and LaRose, 2006[30]; Eastin, 2005[31]; Huang, Cotten and Rikard, 2017[32]). While less researched, we assumed that confidence in others and how they behave in online spaces would similarly drive young people away from or towards digital engagement. In both these areas, significant differences were observed between disadvantaged youth and their peers. Disadvantaged youth were less confident in their ability to use ICTs, the least confident being those with histories of poverty (FSM 55% reported being very confident, NEETs 61% and 63% of working youth).

As Figure 9.6 shows, confidence in others online is where there are large inequalities between NEET and non-NEETs. There is very little difference in trust in online information between the two groups. This, in combination with the lack of confidence in their own ability to deal with unknown (more powerful) others online, as illustrated in the sections on social-communicative and content creation skills, suggests that it is especially the social and interactive aspects of the digital world that are alienating for disadvantaged youth. In the focus groups this came up clearly when discussing looking for work "[I'd rather] have them walk up to me, and shake their hand and have them look me in the eye and say: listen I want the job" and "They get more of an idea of you, that way [face-to-face], as well".

Figure 9.6. Trust in information and in others online



Note: All young people (N=1026 Non-NEETs and N=318 NEETs).

Uses

Social engagement

Communication and socialisation with others is vital to an individual's sense of well-being and belonging, beyond addressing more practical issues like finding jobs and promoting an individual's creations.

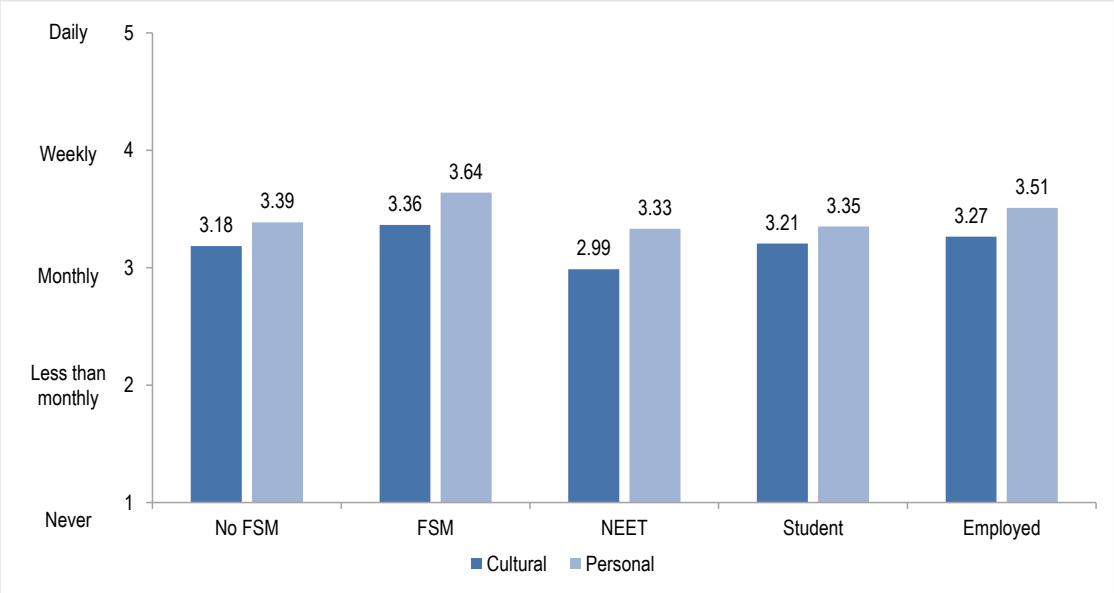
NEETs engaged in the fewest average number of social activities online (on average 3.4 different activities monthly). Comparing those on free school meals and those with no experience of socio-economic disadvantage, a surprising result is that those with a history of poverty are more socially active (on average 4 different types of activities) than those without this history (on average 3.7 activities).

Like most Internet users, NEETs were more likely to engage in informal types of communication. They mostly communicated with people they interacted with intimately in everyday life – family members, carers and friends. NEETs did not like having "people that aren't necessary" or adding people on social media who they do not know in person: "You add your friend; add people you've met." A few who were heavy social gamers considered other players to be friends because they had been in an online world together for a long time. NEETs' definition of what counted as a known person seemed narrower than that encountered in other research with non-NEETs, which might be partially explained by distrust in others and the histories of distrust in institutions and others who do not know them as individuals.

Cultural and personal engagement

Also included in the survey were questions about activities that related to young people's socio-cultural and personal well-being; their sense of identity and belonging to different socio-cultural groups and health and leisure activities.

Figure 9.7. Cultural and personal uses of the Internet (Average frequency of engagement)



Note: All young people (N=1026 Non-NEETs and N=318 NEETs).

What is interesting in Figure 9.7 is that young people with a history of poverty undertake cultural and personal activities more often, but NEETs undertake these activities less frequently than do their more advantaged peers. While frequency of engagement with a broad range of activities is a reasonable indicator of digital inclusion, more important, under the definition we propose here, is what results from these activities. Engaging with others who are not like you, learning about the norms and values of people who are similar to you, finding information about health and developing personal interests, and participating in your community are all very well. However, unless these others treat you well and the information you find makes you feel good about yourself, you will not be included in a digital society.

Outcomes

To find out if young people were able to achieve positive and avoid negative outcomes, we asked them if they succeeded in achieving certain outcomes, and what the quality of these outcomes was. For example, whether the information they found about people like them made them feel better about themselves (positive outcome), whether they were bullied (negative outcome), or whether they improved their health and fitness based on the information they found online or on the apps they used. Here, we make a distinction between social capital and personal well-being outcomes.

Social capital

The number of outcomes achieved partially or fully is not significantly lower for young people with a history of poverty. Across the board, NEETs are less likely to achieve positive social outcomes from undertaking the same activities as their more advantaged peers. The smallest difference was found for informal social outcomes related to frequent interactions with family and friends achieved by 77% of NEETs and 82% of employed people. For those who were not so close, frequent interactions were 54% and 62% for NEETs and employed people respectively.

When it comes to more formal social outcomes there were larger differences. The respondents reported that civic engagement – joining a party or becoming a donor – was achieved by 31% of employed youth but by only 18% of NEETs. The proportion of young people who had positive outcomes with political engagement was also lower; 19% of NEETs managed to get in touch with local members of parliament or politicians versus 33% of employed youth.

In the focus groups, NEET respondents acknowledged the benefits of communicating online, especially with informal ties that were not available for face-to-face interaction because they were living in different countries or separated through foster care. Nevertheless, NEETs also described experiences of isolation, alienation and disconnect from others attributing these to growth in personal technology use. Social experiences in digital and material worlds were seen as depressing rather than enriching social life. One NEET describes this as follows: "I'm so isolated where I'm living, all I've got to do is go on social media. Two months ago, I was running around playing Nerf guns, listening to music, like... being with my friends, being with people and now, I'm linked to my phone and without my phone I get panicky."

Drawing on their own experiences and those of the people around them, NEETs understood that some of their current online activities could potentially have negative outcomes in the future. One NEET reported that her mother's career in the army was jeopardised when a picture of her mother taking part in a civic protest taken when she was 16 years old was posted. She drew a parallel with a celebrity at the other end of the political spectrum, "Miss England, or whatever she was, the other day got called up on a racist comment she'd written about five, six years ago." Based on these indirect experiences, she concluded "[If] I was to say put something offensive online when I'm 14 and I'm a bit stupid and not really thinking of it, that can come back and bite you". Another NEET reported that she did not get the opportunity to work at a tattoo parlour after one of the employees checked her Facebook profile. She explained: "I went for voluntary work, and I had a tattoo done, they went through my Facebook and told me I had unprofessional tattoos […] I have, but you can't see them." It is interesting to note that the strategies to deal with negative outcomes that NEETs proposed involved opting out of the digital world altogether rather than avoiding them online, as non-NEET youth would tend to do.

Cultural and Personal well-being

Personal well-being outcomes consisted of entertainment-, self-actualisation- and lifestyle-related outcomes. Entertainment included watching online content and playing, and self-actualisation and lifestyle outcomes involved improving everyday life (e.g. hobbies, fitness, diet, health).

The number of fully or partially achieved personal outcomes differs greatly between those who live with and without experience of poverty; young people receiving free school meals

in school achieved on average fewer outcomes than young people without free school meals. To a lesser extent, there is a difference among outcomes achieved by NEETs, students and employed youth. Thus, the same pattern occurs as for social uses; while engagement in these activities is often higher among NEETs, the achievement of positive outcomes from this engagement is lower. On the other hand, occurrence of negative outcomes (i.e. something bothered or upset them) is higher, with 36% of those receiving free school meals and 34% of NEETs but only 28% of employed young people indicating being upset by something encountered online.

In the focus groups, a more complex picture dominated by frustration emerged. For example, NEETs recognised the value of information on transport online but often ran into trouble when trying to act on the information provided. One NEET completely miscalculated the time it would take to get to her next appointment even though she had looked it up online and the social support workers had to help her take all other aspects of planning (e.g. leaving the building) into consideration.

Health and lifestyle outcomes were not easily achieved either. For example, one NEET commented that the worrying result of finding unreliable health information was just to not look for any information anymore; "so I don't Google anything anymore, it tells me I'm dying. Even if I get a cough, I'm dying." In addition, NEETs expressed preference for doing things "in the real world" even when it was more work and the outcomes were potentially the same, feeling that they had more control and could hold others more accountable when there was an actual person in front of them.

From inequalities to outcomes

The previous sections were primarily descriptive. Here we would like to explore all the socio-cultural and socio-economic factors together with all the digital factors and how they explain the different social (formal and informal), cultural (related to sense of identity and feelings of belonging to the communities in which one lives) and personal (entertainment, self-actualisation- and lifestyle related) well-being outcomes. The regressions presented in Table 9.1 allow us to draw conclusions about which factors are the most important in explaining which outcomes young people achieve.

The multivariate analysis presented in Table 9.1 shows that *socio-cultural characteristics* are related to achieving social and cultural outcomes; young women achieved fewer positive social and cultural outcomes than young men. *Socio-economic status*, the most focused-on factor of disadvantage in digital inequalities research, was not related to non-economic outcomes, though having a history of poverty (i.e. receiving free school meals) was related to personal outcomes and cultural outcomes before digital factors such as ICT access, skills and confidence, and uses were controlled for. The same counts for the highest level of education achieved; there was only a significant difference between undergraduate and graduate students for social outcomes but, surprisingly, not with the other education categories.

Table 9.1. Regressions of number of social, cultural and personal outcomes achieved (coefficients)

		Social	Cultural	Personal	Negative
	(Intercept)	45.90	22.93	6.68	-17.40
Socio-cultural resources	Age	-0.02	-0.01	0.00	0.01
	Gender (Girls)	-0.19*	-0.15*	0.03	0.02
Socio-economic status	Free school meals [c,d]	0.00	-0.12	-0.29	0.01
	NEET	-0.12	-0.07	-0.04	0.02
Highest education	Primary [a,d]	0.44	0.50	-0.80	0.11
	Secondary [a]	0.13	0.14	-0.46	-0.01
	University entry exam [a]	0.41	0.18	-0.05	0.02
	Further	0.43	0.23	-0.13	0.11
	Education/Vocational [a]	0.52*	0.14	0.30	-0.01
	Undergraduate[a]				
Psychological resources	Problem solving [b, c]	0.16	0.05	0.05	-0.03
	Emotional problems	0.22**	0.11*	0.28**	0.02
	Social self-esteem [b]	-0.02	0.01	-0.04	-0.10**
	Trust in people online	0.18**	0.04	0.04	-0.05**
Access	Number of devices	0.08*	0.02	-0.04	-0.01
	Ubiquity access	0.05	0.03	0.03	0.01
Attitudinal drivers	Intrinsic motivation	-0.09	0.09**	0.10	0.01
	Attitudes towards ICTs	0.01	0.07	0.08	0.00
	Extrinsic motivation	0.05	0.15**	0.10	0.00
Digital skills and confidence	Digital self-confidence	-0.06	0.00	0.07	-0.01
	Operational	0.14**	-0.06	-0.06	0.01
	Information-navigation	0.04	0.03	0.18**	-0.01
	Social	0.01	0.03	-0.04**	0.00
	Content-creation	0.01	0.06*	0.02	0.01**
	Mobile safety	0.05**	0.10**	0.00	0.00
Use of ICTs	Economic use	-0.03**	-0.01	0.01	0.00
	Cultural use	0.11**	0.02**	0.21**	0.01
	Social use	0.30**	0.01	0.15	-0.04
	Personal use	0.40**	0.00	0.55**	0.00

Note: All young people who had achieved at least one outcome within the category.
[a] Education comparison category Graduate education
[b] All Psychological resource significantly related to Social outcomes before controlling for digital factors (i.e. access, motivation, skills, and uses)
[c] Free school meals and problem solving significantly related to cultural outcomes before controlling for digital factors (i.e. access, motivation, skills, and uses)
[d] Primary education and receiving free school meals were significantly related to Personal outcomes before controlling for digital factors (i.e. access, motivation, skills, and uses).

Interestingly, young people with emotional problems achieved more positive social, cultural and personal outcomes. The other *psychological characteristics* were not significantly related to achieving outcomes, with the exception of negative outcomes. That is, those with higher levels of social self-esteem and who trusted people online more were less affected by negative outcomes. Trust was also related to achieving positive social outcomes, echoing the literature that emphasises the importance of trust for cementing and facilitating social capital. The data show that trusting people in digital spaces is related to more positive outcomes of online social interactions[8]. Problem solving was related to outcomes but not after controlling for digital factors, likely because general problem solving abilities are related to digital skills. In the end, in the online sphere, digital skills are important to achieving positive outcomes.

The results on the importance of *access* for young people show clearly that simply having access (on different devices and at different locations) is not enough for young people to achieve positive outcomes of ICT use. The only relationship was between the number of access devices and social outcomes, probably because more devices meant more mobile devices, and thus more applications which are heavily geared towards interpersonal interactions. Positive intrinsic and extrinsic *motivations*, rather than more general *attitudes* towards ICTs, related only to more positive cultural outcomes.

Different *skills* related to different outcomes. Higher technical skills related to more social outcomes achieved, Information-navigation skills to more cultural outcomes achieved and, surprisingly, social digital skills to fewer positive personal outcomes achieved. Perhaps an ability to navigate information and to interact online are related to young people finding information about who they are while social skills allow them to create narrower, quality social networks, missing out on valuable information that would otherwise allow them to improve their personal well-being. The opposite of this could explain why content creation skills were related to both more cultural outcomes and more upsetting, negative outcomes of ICT use. Youth who are capable of producing content might use it to develop their identity and reach out to a wider audience so they feel that their voice is heard, but as a result, they might be more exposed to bullying and harassment.

These conclusions are speculative and further research is greatly needed to explain these phenomena. The first phenomenon is that those who were more skilled in using mobile applications and protecting their personal data (on apps) achieved more social and cultural outcomes. Similarly interesting is that after controlling for socio-economic, socio-cultural and digital factors, *economic* and *social uses* were negatively related to positive social outcomes. The second phenomena could be related to social information/interaction overload. Those who are more engaged socially online achieve fewer positive outcomes because they are overwhelmed by the sheer number of possibilities, or because they go online to compensate for an offline deficit and cannot find what they are looking for, thereby leading to ever increasing searches for contact without getting it. *Cultural uses*, activities that allow one to connect to similar people or to people with different backgrounds and learn about your own or another group, were related to all positive outcomes (social, personal and cultural) and not to negative outcomes. However, activities that related to self-actualisation (i.e. self-help and leisure activities) were related to higher social interaction outcomes and more personal outcomes, but not to cultural outcomes or negative outcomes.

Before moving on to the conclusions, we should comment on the very narrow range of factors that explain negative outcomes. The factors related to a person's tendency to feel excluded by and to distrust others, and those related to skills to create content allowing someone to present oneself to the wider world in part explained negative outcomes. It is thus social vulnerability, and not psychological or economic vulnerability, and softer skills, not traditional technical ones, which are linked to the consequences of the darker side of the Internet.

Conclusions

This chapter set out to discover which young people, part of a generation that has grown up in a society in which the digital is ubiquitous, are able to achieve the positive and avoid the negative outcomes of being online. We asked whether the socio-digital inequalities, observed amongst adults, exist for young people in terms of the first (access and motivation), second (skills and uses) and third (outcomes of use) levels of digital

inequalities. This was done by analysing survey data of a representative sample of English youth and a booster sample of the most disadvantaged group of young people, those not in education, employment or training (NEETs). The study also incorporated analyses of focus groups with these NEETs.

While in the analysis of survey data access was relatively equally distributed and did not relate to inequalities of Internet use, the qualitative data suggested that issues of connectivity (e.g. lack of privacy, convenience, restricted mobility) and limited personal networks of support to help use ICTs (e.g. with less expertise) translated into worse digital outcomes in comparison with young people from more privileged backgrounds. Nevertheless, a deeper analysis of the survey in relation to psychological problems indicated that access to and use of ICTs might offer a way to compensate for these types of vulnerabilities for those with emotional problems, who achieved more positive outcomes. Other research has shown that increased literacy amongst psychologically vulnerable young people could lead to increases in negative outcomes.

Optimism regarding the relationship between access to ICTs and positive outcomes should be tempered somewhat, due to the increasing importance of the digital world in young people's everyday lives and the increased risks this brings for vulnerable youth in particular (Helsper and Smahel, 2019[33]). There are hints of this in the research presented here as well. Socio-economic and socio-cultural disadvantage do not directly translate into achieving fewer outcomes. However, disadvantaged youth were more likely to have characteristics such as low social self-esteem and low trust in others, as well as narrower engagement with societal and personal well-being activities online that are associated with achieving fewer positive outcomes. These attitudes and preferences are embedded in long histories of disenfranchisement within society, which these young people have experienced through interactions and observations in their everyday lives (Buchanan and Tuckerman, 2016[19]; Miller et al., 2015[20]; Simmons and Thompson, 2011[22]).

NEETs' skill levels were similar to those of youth in general; it was in the translation of ICT use into outcomes that the inequalities with their more advantaged peers showed up (through differences in social vulnerabilities and differential engagement with ICTs). This suggests that it is about changing norms and social contexts offline (e.g. the support networks these young people have, respect they receive) as well as online (e.g. positioning certain activities as more attractive, content and designs that make them feel they belong) rather than about increasing disadvantaged youth's technical skills and providing more ubiquitous access. Our research suggests that the same activities undertaken online lead to different experiences for disadvantaged youth based on the negative experiences they have had throughout their lives with outsiders and institutions, and the digital and social environments that lack positive stimuli to engage with ICTs. These differences in the socio-digital ecologies of disadvantaged and advantaged youth are likely to lead to increased inequalities in digital societies (Helsper, 2017[24]).

Implications for policy

- Disadvantaged youth should have private, safe access in the environments in which they live. This will allow them to undertake the activities that require time and facilitate exploration, and that are more likely to lead to positive outcomes, such as those that develop a sense of identity and a feeling of belonging in the societies in which they live.
- The compound disadvantage that disadvantaged youth suffer from, related to feelings of being disrespected by others, not trusting others, less diverse social

networks and less rich digital environments, is related to more negative outcomes and fewer positive ones. This means a multi-stakeholder approach dealing not just with digital but also societal inequalities is vital to help these young people thrive in increasingly digital societies.

- Inequalities in critical literacy, social-communicative and more basic content creation skills are related to inequalities in achieving outcomes more so than technical skills. Further understanding is needed around how being literate in one way and not in another might lead to adverse effects, especially for softer skills such as content creation skills, which are related to encountering more negative outcomes as well as more positive ones.
- Disadvantaged youth should have access to and be aware of the broad sources of support that are available to them; currently they are lacking on both fronts. This means that support workers in different settings should have the digital skills needed and the time to talk to these young people about online opportunities and risks.
- Interventions and policies should be designed around and held accountable to the outcomes that young people achieve from using ICTs. Setting goals related to youth being able to translate digital opportunities into real benefits in everyday life while avoiding more negative outcomes associated with digital engagement is important.
- Access provision and technical skills training should be part of interventions, but changes in the socio-digital ecologies disadvantaged youth grow up in and training in more critical, digital literacy, are fundamental if we want to avoid larger inequalities in increasingly digital societies.

Notes

[1] This chapter draws on data collected as a part of the international Digital Skills to Tangible Outcomes (DiSTO) project based at the London School of Economics and Political Science (LSE). For more information about the DiSTO projects see www.lse.ac.uk/media@lse/research/DiSTO/Home.aspx.

[2] In what follows, utmost care was taken to make sure that young people's voices are authentically represented by keeping quotes as close to the original utterance as possible with the exception of minor verbal clarifications.

[3] The study combined focus groups with NEETs with a country-wide survey, in which booster sampling was used to increase the representation of NEETs who would otherwise have been underrepresented. In total, 1344 young people took part in the survey, which consisted of a representative sample of 1026 young people and a booster sample of 318 NEETs in which women were slightly over represented (reflecting the composition of the general NEET population).

[4] For the focus groups, we collaborated with The Prince's Trust, an NGO working directly with marginalised youth in the United Kingdom. The majority of the young people interviewed in the focus groups participated in the Prince's Trusts' Fairbridge programmes aimed at boosting confidence and providing skill training for the marginalised young people. Focus groups ran for 60-90 minutes and were held in the partner's centres across the United Kingdom where these youth programmes are based. The age of participants ranged between from 16 to 26 years old. The size (4-8 participants each) and the gender composition of the groups varied. For both survey and focus groups, the participants were free to opt out from of participation at any point and their contributions were anonymised.

[5] Italics indicate emphasis in quotes.

[6] The survey used the DiSTO project measures for access, motivations, skills, uses, and outcomes. These are described in more detail in the following sections.

[7] Possible answers ranged from 0='DK what this means' and a scale from 1 to 5 where 1 was not at all true of me and 5 was very true of me.

[8] Cause and effect are difficult to disentangle here: if one has more positive outcomes, one is more likely to trust. However, the literature on trust would suggest that those who trust more are more likely to engage in positive ways with others leading to self-fulfilling prophesies (Uslaner, 2004[34]).

References

Bennett, S., K. Maton and L. Kervin (2008), "The 'digital natives' debate: A critical review of the evidence", *British Journal of Educational Technology*, Vol. 39/5, pp. 775-786, http://dx.doi.org/10.1111/j.1467-8535.2007.00793.x. [15]

Buchanan, S. and L. Tuckerman (2016), "The information behaviours of disadvantaged and disengaged adolescents", *Journal of Documentation*, Vol. 72/3, pp. 527-548, http://dx.doi.org/10.1108/jd-05-2015-0060. [19]

Cho, J. et al. (2003), "Beyond access: The digital divide and Internet uses and gratifications", *IT & Society*, Vol. 1/4, pp. 46-72, www.ITandSociety.org. [6]

Eastin, M. (2005), "Teen Internet use: Relating social perceptions and cognitive models to behavior", *CyberPsychology & Behavior*, Vol. 8/1, pp. 62-75, http://dx.doi.org/10.1089/cpb.2005.8.62. [31]

Eastin, M., V. Cicchirillo and A. Mabry (2015), "Extending the digital divide conversation: Examining the knowledge gap through media expectancies", *Journal of Broadcasting & Electronic Media*, Vol. 59/3, pp. 416-437, http://dx.doi.org/10.1080/08838151.2015.1054994. [7]

Eastin, M. and R. LaRose (2006), "Internet self-efficacy and the psychology of the digital divide", *Journal of Computer-Mediated Communication*, Vol. 6/1, pp. 0-0, http://dx.doi.org/10.1111/j.1083-6101.2000.tb00110.x. [30]

Helsper, E. (2017), "A socio-digital ecology approach to understanding digital inequalities among young people", *Journal of Children and Media*, Vol. 11/2, pp. 256-260, http://dx.doi.org/10.1080/17482798.2017.1306370. [24]

Helsper, E. and R. Eynon (2010), "Digital natives: Where is the evidence?", *British Educational Research Journal*, Vol. 36/3, pp. 503-520, http://dx.doi.org/10.1080/01411920902989227. [16]

Helsper, E. and D. Smahel (2019), "Excessive internet use by young Europeans: Psychological vulnerability and digital literacy?", *Information, Communication & Society*, pp. 1-19, http://dx.doi.org/10.1080/1369118x.2018.1563203. [33]

Helsper, E. and S. Smirnova (2016), "Methodological report of the study: Socio-digital skills and wellbeing of disadvantaged young people", www.lse.ac.uk/media@lse/research/DiSTO/Pdf/Methodology-report-DiSTO-NEETs.pdf. [27]

Helsper, E. and A. Van Deursen (2018), *ICT Skills For Future, Chapter 2*, https://www.itu.int/en/ITU-D/Statistics/Pages/publications/misr2018.aspx. [3]

Huang, K., S. Cotten and R. Rikard (2017), "Access is not enough: The impact of emotional costs and self-efficacy on the changes in African-American students' ICT use patterns", *Information, Communication & Society*, Vol. 20/4, pp. 637-650, http://dx.doi.org/10.1080/1369118x.2016.1203456. [32]

Jones, C. and L. Czerniewicz (2010), "Describing or debunking? The net generation and digital natives", *Journal of Computer Assisted Learning*, Vol. 26/5, pp. 317-320, http://dx.doi.org/10.1111/j.1365-2729.2010.00379.x. [17]

Livingstone, S. (2003), "Children's use of the internet: Reflections on the emerging research agenda", *New Media & Society*, Vol. 5/2, pp. 147-166, http://dx.doi.org/10.1177/1461444803005002001. [25]

Miller, J. et al. (2015), "Exploring youths' perceptions of the hidden practice of youth work in increasing social capital with young people considered NEET in Scotland", *Journal of Youth Studies*, Vol. 18/4, pp. 468-484, http://dx.doi.org/10.1080/13676261.2014.992311. [20]

Nie, P., A. Sousa-Poza and G. Nimrod (2016), "Internet use and subjective well-being in China", *Social Indicators Research*, Vol. 132/1, pp. 489-516, http://dx.doi.org/10.1007/s11205-015-1227-8. [11]

Office for National Statistics (2019), *Young People Not in Education, Employment or Training (NEET): February 2019*, www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment/bulletins/youngpeoplenotineducationemploymentortrainingneet/february2019. [18]

Opgenhaffen, M. and L. d'Haenens (2012), "Heterogeneity within homogeneity: Impact of online skills on the use of online news media and interactive news features", *Communications*, Vol. 37/3, http://dx.doi.org/10.1515/commun-2012-0016. [8]

Prensky, M. (2001), "Digital natives, Digital immigrants Part 1", *On the Horizon*, Vol. 9/5, pp. 1-6, http://dx.doi.org/10.1108/10748120110424816. [13]

Prensky, M. and H. Sapiens (2009), "From digital immigrants and digital natives to digital wisdom", *Innovate: Journal of Online Education*, Vol. 5/3, https://nsuworks.nova.edu/innovate/vol5/iss3/1/. [14]

Ransbotham, S. et al. (2016), "Special section introduction—Ubiquitous IT and digital vulnerabilities", *Information Systems Research*, Vol. 27/4, pp. 834-847, http://dx.doi.org/10.1287/isre.2016.0683. [28]

Robinson, L. and J. Schulz (2013), "Net Time Negotiations Within the Family", *Information, Communication & Society*, Vol. 16/4, pp. 542-560, http://dx.doi.org/10.1080/1369118x.2013.777761. [26]

Russell, L., R. Simmons and R. Thompson (2011), "Ordinary lives: an ethnographic study of young people attending Entry to Employment programmes", *Journal of Education and Work*, Vol. 24/5, pp. 477-499, http://dx.doi.org/10.1080/13639080.2011.573773. [21]

Simmons, R. and R. Thompson (2011), "Education and training for young people at risk of becoming NEET: Findings from an ethnographic study of work-based learning programmes", *Educational Studies*, Vol. 37/4, pp. 447-450, http://dx.doi.org/10.1080/03055698.2010.539783. [22]

Thornham, H. and E. Gómez Cruz (2016), "[Im]mobility in the age of [im]mobile phones: Young NEETs and digital practices", *New Media & Society*, Vol. 19/11, pp. 1794-1809, http://dx.doi.org/10.1177/1461444816643430. [23]

Tsatsou, P. (2011), "Digital divides revisited: What is new about divides and their research?", *Media, Culture & Society*, Vol. 33/2, pp. 317-331, http://dx.doi.org/10.1177/0163443710393865. [1]

Uslaner, E. (2004), "Trust, Civic Engagement, and the Internet", *Political Communication*, Vol. 21/2, pp. 223-242, http://dx.doi.org/10.1080/10584600490443895. [34]

Van Deursen, A. and E. Helsper (2015), "The third-level digital divide: Who benefits most from being online?", in Robinson, L., S. Cotten and J. Schulz (eds.), *Communication and Information Technologies Annual, Studies in Media and Communications*, Emerald Group Publishing Limited, http://dx.doi.org/10.1108/s2050-206020150000010002. [2]

Van Deursen, A., E. Helsper and R. Eynon (2015), "Development and validation of the Internet Skills Scale (ISS)", *Information, Communication & Society*, Vol. 19/6, pp. 804-823, http://dx.doi.org/10.1080/1369118x.2015.1078834. [4]

Van Deursen, A. et al. (2017), "The compoundness and sequentiality of digital inequality", *International Journal of Communication*, Vol. 11, pp. 452-473, http://eprints.lse.ac.uk/68921/. [5]

Van Deursen, A. and J. Van Dijk (2015), "Toward a multifaceted model of Internet access for understanding digital divides: An empirical investigation", *The Information Society*, Vol. 31/5, pp. 379-391, http://dx.doi.org/10.1080/01972243.2015.1069770. [10]

Van Dijk, J. (2005), *The Deepening Divide: Inequality in the Information Society*, Sage. [9]

Wei, K. et al. (2011), "Conceptualizing and testing a social cognitive model of the digital divide", *Information Systems Research*, Vol. 22/1, pp. 170-187, http://dx.doi.org/10.1287/isre.1090.0273. [12]

Williams, Brooks and Shmargad (2018), "How algorithms discriminate based on data they lack: Challenges, solutions, and policy implications", *Journal of Information Policy*, Vol. 8, p. 78, http://dx.doi.org/10.5325/jinfopoli.8.2018.0078. [29]

Chapter 10. Child protection online

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Children are online more than ever before. While a multitude of opportunities arise from the digital environment, so too can the potential for increased exposure to risks such as exposure to harmful content, cyberbullying, age-inappropriate advertising and data misuse. These risks can affect children's well-being and undermine their right to privacy. Online opportunities and risks are not mutually exclusive, and the right balance must be struck between promoting online use and protecting children from risks.

OECD countries implement various legal frameworks and policies to protect children online, and to promote the notion that what is illegal offline should also be illegal online. In 2012, the OECD Council adopted a Recommendation for the Protection of Children Online. This chapter highlights the work to update this Recommendation and considers some of the policy and legislative avenues countries take to protect children online and to promote positive online use.

Introduction

Children are spending more time online than ever before. Increasingly, children and young people are using mobile devices (smartphones and tablets) with Internet connectivity to go online. Time spent online provides many opportunities, such as socialising with peers, expressing themselves through the creation of online content and seeking information on just about any topic imaginable. While real and important opportunities exist, spending more time online can also increase exposure to digital risks. Many of these are online versions of long known offline risks (bullying, racism, cheating and sexual predation) (Livingstone et al., 2011[1]). And just as is the case in everyday life, a zero-risk digital environment is unattainable, however setting the conditions for a safer one is feasible. Children must be provided with the (digital) skills and tools necessary to recognise and manage these risks, without unnecessarily limiting their online opportunities. At the same time it is important to have strong frameworks and guidelines in place so that all stakeholders involved do their part in both protecting children from online risks, and to ensure that benefits can be realised.

To assist governments in this task, the OECD Council adopted in 2012 the Recommendation on the Protection of Children Online (hereafter the "Recommendation") which calls for evidence-based policy making and enhanced co-ordination at the domestic and international levels in order to improve national policy frameworks. Since 2017, the OECD has been working to revise the Recommendation to take account of legal and technological developments since its adoption, and to ensure its continued relevancy.

This chapter will examine some of the different risks children can encounter online, using the typology of risks identified by the OECD in 2011 as a base for this analysis. It will provide an overview of how the risks have evolved since that time, consider the continued relevancy of the typology of risks, and finally will provide an overview of the Recommendation developed by the OECD in 2012 and the efforts underway to update it.

Typology of risks

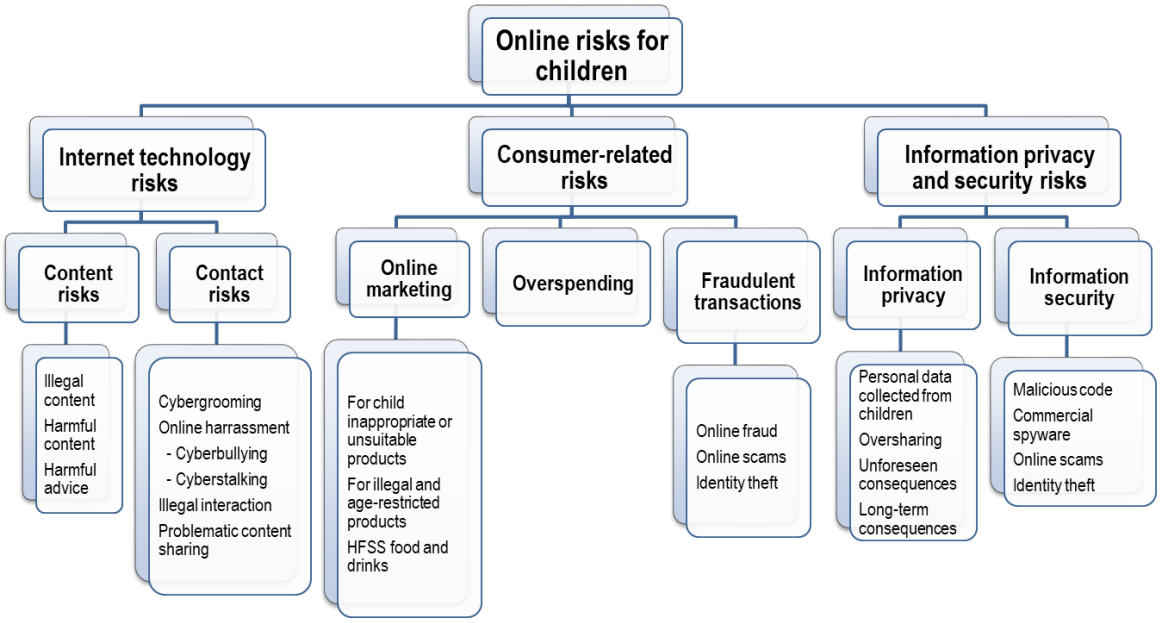
The Recommendation was developed around a typology of risks (see Figure 10.1) including three broad categories: i) Internet technology risk – further subdivided as content and contact risks, including exposure to illegal or harmful content (e.g. pornography, cyber-grooming and cyberbullying) and advice; ii) consumer risks related, for example, to online marketing and fraudulent transactions; and iii) information privacy and security risks.

In 2017, the OECD set out to examine whether the Recommendation remains relevant by carrying out a survey of OECD member countries ('the Survey'), followed by an extensive review of the legal and policy environment, and an expert workshop held in Zurich in October 2018. Key findings from this work indicate that broadly, while the typology of risk remains relevant, the risk landscape has significantly evolved since 2012 and there are a number of issues that need to be taken into account or expanded upon in this typology.

Firstly, the concept of a conduct risk was not previously included. In 2011, the OECD Report covered behaviour by children that creates risks for themselves, however it specifically excluded online activities whereby children were creating risks for other children (OECD, 2011[2]). At the time the Recommendation was developed, Snapchat did not exist, and Instagram, WhatsApp, Twitter, Whisper, Tumblr and a host of other platforms were barely known. Teenagers today are enthusiastic users of social media sites, chatrooms and apps, and are more prone to creating and sharing user-generated content

than before. A conduct risk refers to situations where the child is the actor in a peer-to-peer exchange, including when their own conduct can make them vulnerable (e.g. sexting). It is distinguishable from a contact risk whereby a child is a victim of an interactive situation (Livingstone et al., 2011[1]).

Figure 10.1. Typology of risks: OECD 2012 Recommendation



Secondly, it is not clear that the typology of risk has kept up to date with changes in the privacy space. There have been significant changes in this area since the adoption of the 2012 Recommendation. Today, children are more likely to be content creators and data subjects themselves. Lastly, the current typology of risk does not address the potential risks of overdependence and mental health issues (although robust evidence in this space is lacking; see Chapter 8).

The following section of this chapter will consider briefly the main risk areas identified above. Namely: contact risks (encompassing conduct risks), content risks, consumer risks and privacy risks. This includes an analysis of how legal and policy responses are able to respond to these risks today.

Contact risks

When considering contact risks – also encompassing situations where a child's conduct may place them at risk – three main areas and the consequent legislative responses are addressed below. These are cyberbullying and harassment, sexting and sextortion.

Cyberbullying

Cyberbullying has been defined as, "intentional harmful behavior carried out by a group or individuals, repeated over time, using modern digital technology to aggress against a victim who is unable to defend him/herself" (Campbell and Bauman, 2018[3]). However, several researchers have used differing terms and qualifiers to define cyberbullying, and how it may be distinguished from more 'traditional' forms of bullying and harassment. Some researchers stress the importance of a power imbalance weighted in favour of the aggressor,

likening cyberbullying to the definition of traditional bullying, but adding 'digital technology' as the mechanism by which harm is inflicted. Others have suggested that anonymity and publicity are defining features of cyberbullying, a suggestion that is however, contested. Even though these two features are easier to accomplish through cyberbullying, they are not necessarily always present (the bully can be known and could use private channels) (Campbell and Bauman, 2018[3]).

This seeming inability for researchers to land upon a common definition of what constitutes cyberbullying, paired with divergent legislative responses (as will be seen below), renders the issue a moving target and makes trends difficult to reliably assess. In addition, the unique facets of the digital environment can increase risks for cyberbullying. These include: the huge size of the potential audience; continuous access; the permanency of online content; the ease of copying and distributing material; and a lack of oversight of online behaviour (Campbell and Bauman, 2018[3]). Large-scale studies have shown that cyberbullying is associated with high levels of stress (Cross et al., 2009[4]), social difficulties, depression and anxiety (Campbell et al., 2013[5]). Compared to traditional bullying, those who have been cyberbullied report higher levels of anxiety, depression and social difficulties (Perren et al., 2010[6]; Sticca and Perren, 2013[7]). In some studies, cyberbullying has been seen to have a stronger association with suicidal behaviour (thoughts, plans and attempts) than traditional bullying (Bonanno and Hymel, 2013[8]; Klomek, Sourander and Gould, 2011[9]). However, these findings are variable and do not establish the direction of the association (i.e. whether the bullying is the cause of the mental health struggles or vice versa, see also Chapters 12 and 14).

Perhaps as a result of this lack of consensus among research and policy actors as to what actually constitutes cyberbullying, countries tackle this problem in a variety of ways. Some continue to apply their traditional harassment laws to cyberbullying offences. For example, under UK legislation there is not a specific law that expressly makes cyberbullying illegal, although it can be considered a crime under different pieces of legislation. While this legislative framework is currently the subject of a law commission review, it is observed that spread of legislation creates some complexity in that it requires both applying the elements of traditional harassment offences to online behaviour, as well requiring that the appropriate offence be identified in the midst of multiple pieces of legislation.

Like the United Kingdom, Luxembourg and Norway have laws to address harassment, however, they do not specifically relate to online conduct. Interestingly, Luxembourg noted in their response to the Survey that a person who harasses someone through the dissemination of an image may be subject to sanctions if that image otherwise falls foul of a copyright law. Norway also indicated that the misuse of an image – namely, the reproduction of a photo of a person without their consent – could fall foul of copyright laws. These two responses are an interesting example of attempts made by governments to address issues as they arise using existing laws, and highlights the need for a targeted response. Unless the image falls foul of a copyright law, any person harassed in this way is left without a remedy should copyright law not apply. In addition, there is likely little awareness of the availability of these causes for legal action and redress.

As of August 2018, forty-nine states in the United States had authorised bullying laws, generally requiring schools to create policies to deal with bullying and include cyberbullying or online harassment as an offence. Furthermore, there are criminal sanctions for cyberbullying or for electronic forms of harassment. In Canada, legal responses available incorporate both civil and criminal law (i.e. suing for defamation, subject to

suspension/expulsion, subject to traditional negligence laws). Harassment and defamatory libel in this instance are both prosecutable under criminal law.

Some governments have also recently sought to open up social media companies to direct oversight, and liability. On 1 January 2018, Germany introduced the Act to Improve Enforcement of the Law in Social Networks (Network Enforcement Act) also known as NetzDG (Bearbeitungsstand, 2017[10]). This Act protects against insult, defamation and intentional defamations (among other issues such as hate speech), and compels social media companies to remove content (in the face of significant fines). An Australian Senate Committee recently recommended that civil liability laws be amended to create a duty of care on social media platforms to ensure the safety of their users, and that regulatory measures backed up by significant financial penalties be used to ensure that such platforms both prevent and respond quickly to cyberbullying (Australian Senate, 2018[11]).

Most of the aforementioned laws operate, to some extent, in a silo. Some countries have thus sought to create a mechanism to facilitate reporting and legal action. In Australia, for example, the e-safety commissioner has powers in this area in conjunction with other responsibilities related to protecting minors online and to promoting digital literacy. In relation to cyberbullying, the e-safety commissioner provides an easy online process for reporting cyberbullying.

Sexting

'Sexting' refers to the exchange of sexual messages and it is a rising online phenomenon as mobile devices become more accessible. Sexting is an example of an emerging issue to which an isolated legislative response is not possible, and which may be both ineffective and in some cases damaging. This issue is a prime example of a new and emerging online risk where the narrow conceptualising of laws and frameworks can in fact prove both ineffective and often counter-productive, if not outright harmful (Byrne and Burton, 2017[12]).

While intuitively it may seem that sexting would emerge as a risk only if an image is shared without the subject's consent, when minors engage in sexting they may be self-producing child pornography material that can quickly spread online and remain on the Internet permanently. This fact contributes to a complicated legal environment in terms of criminal liability and victimisation. In a number of countries, the sharing of sexualised or nude images among teenagers is considered illegal, and can result in the prosecution and punishment of adolescents under national pornography laws (UNICEF, 2012[13]; Byrne and Burton, 2017[12]). In a number of countries, child pornography laws may require a mandatory placing of the offender on a child sex register list – a move which can have life-long negative impacts and consequences. There are examples of minors in different countries being prosecuted and charged for the production, distribution and/or possession of child pornography when in some instances this resulted from children sending nude personal images or "selfies" to each other.

Sexting has the potential to be very harmful to children's privacy and mental health. Sexual pictures can spread quickly online and remain on the Internet permanently. However, even in this space there is disagreement with regard to whether or not the simple act of sexting itself causes harm, or whether harm only arises when the exchange is unwelcome or harmful in some way (Livingstone and Görzig, 2014[14]; Gillespie, 2013[15]).

Gender can influence sexting behaviours (see also Chapter 12). There is research from Canada suggesting that youth that accept traditional gender stereotypes have a significantly

higher tendency to share sexts (Johnson et al., 2018[16]). Boys who accept traditional gender stereotypes are more likely to share sexts than girls who share the same beliefs. At the same time, girls who share sexts can be perceived as violating gender norms and even giving up the right to their pictures. Consequently, sexism and gender stereotyping appear to play a significant role in the 'culture of sharing' (Johnson et al., 2018[16]).

The legal response to sexting is emerging in a space where it remains unclear exactly what the nature of the risk is. Is the risk the mere exchanging of messages with sexual content or images, or does it only arise when there is some coercion involved or forwarding of the images and associated consequences? It has been suggested that certain groups are more likely to experience harm from receiving sexual messages, notably girls, younger children, and those who face psychological difficulties; accordingly, policy responses should be aimed at ameliorating harm to these groups (Livingstone and Görzig, 2014[14]). In any event, it is clear that the current legislative response is inadequate to address the risk of harm. This response predominantly relies on criminal laws, which in many cases criminalise the young persons who are themselves at risk, rather than provide effective preventative measures or support. Recent research suggests that when minors are aware of the legal ramifications of sexting, they are less likely to engage in underage sexting. However, many youth are unaware of the legal consequences of sexting; therefore, accessible information campaigns may be a simple but effective way of reducing rates (Strohmaier, Murphy and DeMatteo, 2014[17]).

Sextortion

Sextortion is a new type of online exploitation of adolescents that is being identified by the media, law enforcement and policy makers. Sextortion refers to the threat to share or expose a sexual image in order to coerce the victim into doing something (e.g. sharing more pictures, engaging in sexual activity, paying money or other demands) – even if the sharing of the image itself never occurs (Wolak et al., 2018[18]). It is not to be confused with sexting and/or the non-consensual sharing of sexual images (often for a bullying or 'revenge porn' purpose), which fall into a separate category. Sextortion is not a term presently defined in legal instruments, and prosecutions for sextortion may rely on identifying criminal liability within the provisions of existing laws that cover related offences (for example, those against: hacking; child pornography; harassment; extortion; stalking; and privacy violations) (Wolak et al., 2018[18]).

Content risks

In 2011, the OECD identified three main subcategories of content risk: i) illegal content; ii) age-inappropriate or harmful content; and iii) harmful advice (OECD, 2011[2]). Broadly speaking, these three subcategories persist today, although advances in technology have altered both the potential volume of this material, and the ways by which children may become exposed to it. Some issues that stand out as either new or amplified since the 2012 Recommendation include: hate speech, offensive material and harmful content, traditional broadcasting regulation, and fake news.

The number of children affected by exposure to hate content online is rising. According to Ofcom, the United Kingdom's Communications Regulator, in 2017, 45% of children aged 12-15 in the United Kingdom reported seeing hateful content online over the previous year (2016) (Ofcom, 2017[19]). This was an increase from the year before when 34% of children in this age group made this report (Ofcom, 2016[20]). However, it is also noted that although this is a rising trend, there is also evidence that children and young people are becoming more aware of how to respond to exposure to hateful content online and how to make a

report. Additionally, this type of conduct may fall within criminal legislation in countries, such as those that cover hate crime in offline spaces. However the available legal responses to date have been largely ineffective, suggesting the need for targeted action adapted to the digital environment. At the European Union (EU) level in 2016 the European Commission developed the Code of Conduct on Countering Illegal Hate Speech Online. The Code was developed with the input and agreement of major platforms such as Facebook, Twitter, Microsoft and YouTube. In the course of 2018, Instagram, Google+, Snapchat and Dailymotion joined the Code. Jeuxvideo.com joined in January 2019. The Code requires the review of all reports of hate speech online within a 24-hour time frame. The latest 2018 evaluation shows that the companies are now assessing 89% of flagged content within 24 hours and 72% of the content deemed illegal hate speech is removed (European Commission, 2019[21]).

In New Zealand, the Harmful Digital Communications Act (Parliament of New Zealand, 2017[22]) deals with both the sending and the publishing of offensive material (among other matters). The Act's guiding principles include that: 'a digital communication should not be grossly offensive to a reasonable person in the position of the affected individual' (Principle 3); and, 'a digital communication should not be indecent or obscene' (Principle 4). The Act provides sanctions, enforcement and take down provisions.

Several countries have also recently taken policy or programmatic steps to try and specifically address the issue of fake news, which is perceived as an urgent and emerging threat. Media and digital literacy, and critical thinking are generally viewed as essential skills in this regard. Increasingly, government action in this area includes programmes addressed to teaching children and young people to be able to distinguish between what is fact and what is fiction in information distributed online. This is a particularly critical skill given that children and young people predominantly obtain their news from social media sources, which may or may not be reliable, and accordingly children must be able to critically analyse the content they are consuming. In 2017, a public broadcaster in the United Kingdom undertook a survey on consumers' capacity to identify "fake news". Of the people surveyed, only 4% were able to distinguish what was real from what was fake. In the same year, the United Kingdom's Communications Regulator identified that 73% of 12–15 year-olds were aware of the concept of fake news, while 39% said that they had ever seen something online that they thought was a fake news story (Ofcom, 2017[19]).

The United Kingdom has since indicated a commitment to ensuring that minors' critical thinking skills are enhanced through digital literacy training, so that young people can better recognise reliable from unreliable sources and intentionally misleading information on the Internet. Australia's e-safety commissioner has publicly available information designed to help minors identify what is real and what is not on the Internet.

Consumer risks

In 2011, the OECD indicated that children may "face consumer risks online when *i*) they receive online marketing messages that are inappropriate for children (e.g. for age-restricted products such as alcohol); *ii*) they are exposed to commercial messages that are not readily identified as such (e.g. product placements) or that are intended only for adults (e.g. dating services); or *iii*) their credulity and inexperience are exploited, possibly creating an economic risk (e.g. online frauds)" (see (OECD, 2012[23])). This statement remains true today, however a host of emerging practices potentially pose a risk to children. This includes online marketing, in-app purchases, digital and viral marketing strategies, and the growing prospect of 'big data' mining. All these issues may pose risks to children

in that they may amount to commercial or peer pressure, have implications for protecting children's privacy, or lead to the exposure of a child to inappropriate products or messages. In response to the 2017 OECD Survey, few countries indicated that their laws specifically addressed consumer risks to children, and/or that they had any specific statutory safeguards in place to prevent inappropriate advertising to, and/or dealings with, children.

Privacy risks

Legal responses today are striving to keep pace with technological advancements and how this affects children's privacy and the processing of their personal information. Before considering the legal responses, it is useful to first briefly review the relevant data typologies that the legal responses are attempting to address, and how children of different ages comprehend these typologies in terms of their privacy. Data can be typified by:

- 'data given' – the data contributed by individuals (about themselves or about others), usually knowingly though not necessarily intentionally, during their participation online
- 'data traces' – the data left, mostly unknowingly – by participation online and captured via data-tracking technologies such as cookies, web beacons or device/browser fingerprinting, location data and other metadata
- 'inferred data' – the data derived from analysing data given and data traces, often by algorithms (also referred to as 'profiling'), possibly combined with other data sources (Livingstone, Stoilova and Nandagiri, 2018[24]).

Research has shown that while children are aware that they may have contributed data about themselves or about others as a result of their online activities, the extent to which they understand the consequences for their privacy will depend upon their own understanding of interpersonal relationships, which in turn depends on their age, maturity and circumstances. Primarily, children are aware of 'data given' in interpersonal contexts (e.g. because they provide data themselves, or they may be aware that their family and friends do too). Children are becoming more aware of the commercial uses of 'data traces', however their understanding of 'inferred data' and its value to businesses will be dependent upon their understanding of business models operating in commercial and institutional contexts – something that they are rarely taught about (Livingstone, Stoilova and Nandagiri, 2018[24])

At the same time, these commercial uses of children's data are themselves seemingly becoming a more prevalent and visible concern. More apps are being designed and targeted towards children and the invention of 'smart connected toys' creates more opportunities for children's data to be collected and used – often in a manner contrary to protections designed to protect the privacy of children in this regard as demonstrated in two recent studies (Norwegian Consumer Council, 2017[25]; Reyes et al., 2018[26]).

Legal and policy responses

At the national level, almost all countries responded to the OECD 2017 Survey that their privacy laws act to protect children in some way, although issues relating to consent, to the processing of data, and to the breaches of these laws may differ. As was the case in 2012, at the time the OECD Recommendation was adopted, information privacy and information security risks are largely covered by privacy and general data protection rules, and criminal laws. Operationally, privacy issues may fall under the responsibility of a specific regulator or commissioner, who in their role, undertake actions that may directly or indirectly relate

to the protection of children online. Countries in the EU that are bound by the General Data Protection Regulation (GDPR) (see also Chapter 12) now uniformly recognise that children merit special protection as it relates to their personal data, particularly in relation to marketing, creating profiles, and the collection and storage of data; and provides special rules related to the provision of consent for the processing of a child's data.

In addition to the GDPR, special protection for children in the processing of their data is also found at the European level in the revised Audiovisual Media Services Directive (AVMSD). Its article 6a(2) provides that the personal data of minors collected or otherwise generated by media services are not to be processed for commercial purpose, such as direct marketing, profiling and behaviourally-targeted advertising. However, this is a relevantly new provision, and it will take time to see its efficacy in practice.

In other OECD countries, consent is required by the information subjects themselves or has to be given on behalf of children under a certain age (e.g. 15 in Australia). In the United States, the Children's Online Privacy Protection Act (COPPA) of 1998 prohibits the collection, use and dissemination of personal information from children under the age of 13 without informed, advance parental consent. In some countries the violation of children's privacy is criminalised.

The 2012 OECD Recommendation on the Protection of Children Online

This last section will consider the Recommendation, and the process for its review. Consistent with the 1989 United Nations Convention on the Rights of the Child, the Recommendation includes principles for all stakeholders involved in making the Internet a safer environment for children. It focuses on three main challenges faced by governments which underline the emerging nature of the protection of children online as a public policy area: *i)* the need for an evidence-based policy making approach; *ii)* the need to manage policy complexity through enhanced policy co-ordination, consistency and coherence; and *iii)* the need to take advantage of international co-operation in improving the efficiency of national policy frameworks and fostering capacity building.

The Recommendation focuses on the protection of children as users of the Internet, and was grounded in the typology of risks and the 2011 report, as has been reported above. It is noted that the Recommendation does not address child pornography or sexual abuse images online, a decision made based on the notion that child pornography or sexual exploitation called for radically different measures to protect minors and were covered in other international instruments, in some cases requiring law enforcement co-operation such as through Interpol.

The Recommendation is divided into three sections. The first section covers policy making for all stakeholders and includes principles on:

- empowering children, recognising the primary role of parents in minimising risks to their children online (as they do offline)
- the adoption of policy measures proportionate to the risks, respecting fundamental values, and seeking to avoid undermining the framework conditions that have enabled the Internet to succeed
- flexibility to address differing ages and vulnerabilities among children.

The second main section covers domestic policy making by governments and recognises that good policy making requires leadership, co-ordination, coherence, awareness raising,

evidence and technology solutions. The final section addresses international policy making by governments and addresses the importance of international networks, information and data sharing, capacity building, and the participation of other intergovernmental organisations.

The changing nature of online risks & updating the Recommendation

The Recommendation on the Protection of Children Online instructs the OECD Committee on Digital Economy Policy (CDEP) to review this Recommendation and its implementation, and to report to Council within five years of its adoption. Beginning from the end of 2016, steps have been taken to carry out this task as described in the box below.

Box 10.1. Process for review of the OECD Recommendation on the Protection of Children Online

At its 40th meeting on 15-16 November 2016, the Working Party on Security and Privacy in the Digital Economy (SPDE) discussed the process for the review and agreed to circulate a questionnaire to delegations on the implementation and continued relevance of the Recommendation. The questionnaire was circulated in 2017 seeking to gather information on recent developments in child online protection policy, identify areas where the OECD Recommendations may need to be updated and to assess the potential impact of contextual changes (e.g. technologies, usages and threats).

Thirty-four countries responded to the questionnaire and a preliminary report was presented in May 2017. The findings suggest that compared to 2012, the environment that gave rise to the Recommendation has significantly evolved. Much of this evolution is due to the growth in the use of mobile devices and social networks - for many countries, cyberbullying is a significant and growing concern, followed by sexting, children's privacy and hateful content.

As a result of the survey, it was agreed by delegates that more evidence was needed to explore potential options for updating the Recommendation. There was consensus that a review of recent legal and policy developments as well as an expert meeting would be a useful way forward. Consequently, a review of recent developments in legal frameworks and policies for the protection of children was undertaken, as well as a meeting of experts in Zurich in October 2018. As a result of this analytical work, a multi-stakeholder international expert group was established in 2019 to provide guidance for the revision of the Recommendation.

Three layers of policy making

The OECD Recommendation set out three different levels of policy responses:

- national frameworks: this comprises legislative responses and policy instruments (direct and indirect)
- multi-stakeholder policy making: this is related to the different roles and responsibilities of stakeholders
- international policy making: this comprises cross-border co-operation and initiatives targeting knowledge-sharing.

Policy makers are encountering different issues as digital technologies become increasingly integrated into children's daily life. The complexity of digital spaces, the pace of change, including the different devices and platforms available, social contexts and differing online environments mean that simple legal and policy measures are not sufficient. There is further need for a balancing act between actions to promote greater use of digital technologies (for example through their integration in national curricula and the promotion of digital skills and literacy) and actions designed to protect minors from risks associated with their use. Policies must be holistic, taking into account the many different and interconnected ways of being online, including for learning, communication, entertainment, creativity, self-expression and civic participation, and whether children use it at home, school or elsewhere. Also too often, policy on risks are developed independently of those on opportunities, and vice versa. For example, promoting digital literacy through policy action will be more effective if it is incorporated into a holistic programme, also targeting responsible usage, digital citizenship and online safety. Strategic visions and centralised institutions can help systems deal with this complexity and overcome fragmentation in the system.

The following will briefly consider the analysis of each of the three levels of policy making outlined above.

National legal and policy frameworks

Of the 34 respondents to the OECD Survey (see Box 10.1), all had some form of legislative and policy responses in place addressing risks to children online. However, in general, these responses are fragmented and countries largely appear to lack a comprehensive framework.

In terms of legislative responses, in 2011, the OECD reported that most countries would subscribe to the notion that things that are illegal offline should also be illegal online, thereby championing a normative approach. The main challenge at that time, which still persists today, is finding ways of ensuring and enhancing compliance/enforcing existing instruments, rather than developing and adopting additional measures. The laws that are in place cover three main elements: *i)* criminality (i.e. to address risks of sexual abuse, harassment); *ii)* content regulation; and *iii)* privacy protection. There are two distinct types of laws as well: those which relate directly to children and those which cover the entire population, and by virtue of that, extend to minors.

In terms of policy making, the results indicate that countries also tend to either create new policies (or laws) or adapt existing ones to address child safety online and new and emerging risks. Often, these policies are not child-specific, and in some instances are found embedded within policies that apply more broadly, such as those targeting innovation and skills for example. The ad hoc development of policy arrangements and wide implementation instruments and strategic goals further highlight that these policies are not always implemented as part of a single strategic vision for the protection of children online.

Countries with a national digital strategy, designed to inform the direction of the overall digital transformation of a country, may more readily adopt a whole-of-government approach in policy making. This being said, while some national digital strategies take this holistic position, a majority still take a protective stance on children instead of providing an overarching vision taking into account both risks and opportunities. Similarly, statutory oversight bodies may often focus on protective measures rather than promoting positive Internet use and digital literacy.

Lastly, the OECD Survey results highlights the largely reactive nature of national policy and legislation, consistent with the findings of O'Neill and Dinh in their mapping of 31 EU countries who found a similar tendency (2018[27]).

Multi-stakeholder policy frameworks

There is a common understanding that an online child protection policy rests on the commitment and shared responsibilities of all stakeholders. Multi-stakeholder policy making occurs when governments enter into partnerships for the delivery of complementary policy actions, for example through the promotion of industry codes of conduct or self-regulation actions. For example, the OECD Privacy Guidelines recognise a multi-stakeholder group as comprising of experts from governments, privacy enforcement authorities, academia, business, civil society and international technical experts (OECD, 2013[28]).

A number of countries have sought to enter into partnerships with industry and civil society to address risks to children online. In some countries specific bodies have been created to coordinate the activities of private and public stakeholders. One specific example is the United Kingdom's Council for Internet Safety (UKCIS – previously the Council for *Child* Internet Safety, however now with an expanded role). This council brings together Government, industry, law enforcement, academia, charities and parenting groups to work in partnership to help keep people safe online, on a non-statutory basis (Government of the United Kingdom, n.d.[29]).

In addition to such a body, several countries rely on both consultation and engagement with civil society and with industry to develop and implement strategies and programmes for child online protection. This may take the form of direct policy input, joint initiatives, and representation on larger multi-stakeholder forums. It may include the offer of services, awareness raising activities, resource development, research and education.

From the industry perspective, a number of companies take an active stance in relation to ensuring the protection of children online. In particular, the major social media and other Internet sites have policies regarding child protection, although with varying efficacy. For example, Google has taken steps to enforce COPPA compliance (see above under Privacy risks). Its 'Designed for Families' programme provides app developers with information on COPPA and requires that they certify they are in compliance. However, there is limited enforcement of this (Reyes et al., 2018[26]).

International policy frameworks

There is a common understanding across countries that international and regional co-operation is central to addressing the challenges of child protection in an inherently global digital environment. Intergovernmental organisations at international and regional levels have a role to play in this space within their respective remits. The work that is undertaken in this space includes some useful actions towards harmonisation of policy responses in particular to address the potential risk of digital divides and for inclusivity as well as measurement and monitoring. Regional and international co-operation takes place at both policy and operational levels.

At the regional level, both the Council of Europe (COE) and the EU have developed policy frameworks to protect children online. The work of the COE emerges largely in a rights space, while the EU's actions are centralised in the *Better Internet for Children Strategy* ('the BIK Strategy') and its associated activities.

The COE and the United Nations Committee on the Rights of the Child – the body of 18 independent experts that monitors implementation of the Convention on the Rights of the Child by its State parties – have taken steps seeking to ensure that children's rights are appropriately protected and upheld in any legislative or policy response. While to date, policy measures focus to a large extent on the need to protect children, this emphasis has been noted as contributing to a diminishment of children in their role as individual rights holders. It neglects the fact that they themselves are creators of online content, have a right to participate in matters that affect them, have a right to provision of information and a right to a freedom of expression (Byrne and Burton, 2017[12]).

The other regional body somewhat active in this space is the Asia-Pacific Economic Cooperation (APEC), which at its 2012 Telecommunications and Information Ministerial Meeting acknowledged, for example, that vulnerable groups, especially children, are particularly susceptible to risk in an online environment, and has since called upon its members to implement strategies and promote cyber safety and cyber security (Asia-Pacific Economic Cooperation, 2012[30]).

The International Telecommunication Union (ITU) Child Online Protection Initiative (COP) links an international collaborative network (including countries, other international organisations, the private sector and civil society) with the common aim of promoting the protection of children online and has released Guidelines for Child Online Protection targeted separately at: children; parents, guardians and educators; policy makers; and industry. These Guidelines are currently under review. UNICEF is also active in this space. For example, the UNICEF Office of Research - Innocenti has prepared a number of reports on the safety of children online and has launched the Global Kids Online Research Initiative in partnership with the London School of Economics and Political Science and EU Kids Online. This project seeks to fill a gap that previously existed regarding comprehensive global research. Separately, UNICEF partnered with ITU to develop the above-mentioned guidelines for industry on online child protection

Finally, the Insafe and INHOPE networks are examples of international work at an operational level acting to respond to reports of risk through hotlines and helplines (European Commission, n.d.[31]).

In sum

This chapter has considered new and emerging risks that have come to light since the OECD first considered the protection of children online, through its 2011 report and resulting Recommendation. This has been done through a survey of member countries, analysis of the laws and policies in place today as well as a consultation with international experts. This body of work examined in particular whether laws and policies have kept pace with the changing environment. While some promising practices are seen – such as the creation of (although few) single oversight bodies and a continued common understanding of the importance of international and regional co-operation – a number of issues remain.

These include:

- the wide-ranging nature of the legislative responses (combining/segregating online and offline responsibilities; siloed responsibilities)
- the drawbacks of separating legislative responsibilities (duplicating efforts; overlooked matters; the creation of new social issues)

- fragmented policy responses and few single oversight bodies
- a lack of consistent measurement and reporting – including varied definitions and terminology; and consequently, a lack of evidence-based policy making
- a recognition of the importance of engaging business and a need to better capitalise on multi-stakeholder action
- a recognition of the importance of digital and media literacy, and the promotion of the positive benefits of online content and engagement, and a need to better balance promotion of the positives with protective actions
- the changing nature of the privacy space, and a need to better recognise children as data subjects and content creators, and consequently how best to protect them in this space
- the need to consider including the concept of a conduct risk within the OECD's typology of risk.

References

Asia-Pacific Economic Cooperation (2012), *2012 Leaders' Declaration*, www.apec.org/Meeting-Papers/Leaders-Declarations/2012/2012_aelm. [30]

Australian Senate, L. (2018), *Adequacy of existing offences in the Commonwealth Criminal Code and of state and territory criminal laws to capture cyberbullying*, www.aph.gov.au/Parliamentary_Business/Committees/Senate/Legal_and_Constitutional_Affairs/Cyberbullying/Report. [11]

Bearbeitungsstand (2017), *Act to Improve Enforcement of the Law in Social Networks (Network Enforcement Act)*, www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/Dokumente/NetzDG_engl.pdf;jsessionid=829D39DBDAC5DE294A686E374126D04E.1_cid289?__blob=publicationFile&v=2. [10]

Bonanno, R. and S. Hymel (2013), "Cyber bullying and internalizing difficulties: Above and beyond the impact of traditional forms of bullying", *Journal of Youth and Adolescence*, Vol. 42/5, pp. 685-697, http://dx.doi.org/10.1007/s10964-013-9937-1. [8]

Byrne, J. and P. Burton (2017), "Children as Internet users: How can evidence better inform policy debate?", *Journal of Cyber Policy*, Vol. 2/1, pp. 39-52, http://dx.doi.org/10.1080/23738871.2017.1291698. [12]

Campbell, M. and S. Bauman (2018), "Cyberbullying: Definition, consequences, prevalence", in *Reducing Cyberbullying in Schools*, Elsevier, http://dx.doi.org/10.1016/b978-0-12-811423-0.00001-8. [3]

Campbell, M. et al. (2013), "Do cyberbullies suffer too? Cyberbullies' perceptions of the harm they cause to others and to their own mental health", *School Psychology International*, Vol. 34/6, pp. 613-629, http://dx.doi.org/10.1177/0143034313479698. [5]

Cross, D. et al. (2009), *Australian Covert Bullying Prevalence Study (ACBPS)*, Child Health Promotion Research Centre, Edith Cowan University, https://docs.education.gov.au/system/files/doc/other/australian_covert_bullying_prevalence_study_executive_summary.pdf. [4]

European Commission (2019), *The EU Code of conduct on countering illegal hate speech online*, https://ec.europa.eu/info/policies/justice-and-fundamental-rights/combatting-discrimination/racism-and-xenophobia/countering-illegal-hate-speech-online_en. [21]

European Commission (n.d.), *Better Internet for Kids - Insafe and INHOPE*, www.betterinternetforkids.eu/web/portal/policy/insafe-inhope. [31]

Gillespie, A. (2013), "Adolescents, sexting and human rights", *Human Rights Law Review*, Vol. 13/4, pp. 623-643, http://dx.doi.org/10.1093/hrlr/ngt032. [15]

Government of the United Kingdom (n.d.), *UK Council for Child Internet Safety (UKCCIS)*, www.gov.uk/government/organisations/uk-council-for-internet-safety. [29]

Johnson, M. et al. (2018), *Non-Consensual Sharing of Sexts: Behaviours and Attitudes of Canadian Youth*, http://mediasmarts.ca/sites/mediasmarts/files/publication-report/full/sharing-of-sexts.pdf. [16]

Klomek, A., A. Sourander and M. Gould (2011), "Bullying and suicide: Detection and intervention", *Psychiatric Times*, Vol. 28/2, www.psychiatrictimes.com/bullying-and-suicide. [9]

Livingstone, S. and A. Görzig (2014), "When adolescents receive sexual messages on the internet: Explaining experiences of risk and harm", *Computers in Human Behavior*, Vol. 33, pp. 8-15, http://dx.doi.org/10.1016/j.chb.2013.12.021. [14]

Livingstone, S. et al. (2011), *EU Kids Online: Final Report 2011*, EU Kids Online, London, http://eprints.lse.ac.uk/id/eprint/45490. [1]

Livingstone, S., M. Stoilova and R. Nandagiri (2018), "Conceptualising privacy online: What do, and what should, children understand?", http://eprints.lse.ac.uk/90228/. [24]

Norwegian Consumer Council (2017), *Significant security flaws in smartwatches for children*, Forbrukerrådet, www.forbrukerradet.no/side/significant-security-flaws-in-smartwatches-for-children/. [25]

O'Neill, B. and T. Dinh (2018), *The Better Internet for Kids Policy Map: Implementing the European Strategy for a Better Internet for Children in European Member States*, www.betterinternetforkids.eu/bikmap. [27]

OECD (2013), *The OECD Privacy Framework 2013*, OECD Publishing, Paris, www.oecd.org/sti/ieconomy/oecd_privacy_framework.pdf. [28]

OECD (2012), *The Protection of Children Online: Recommendation of the OECD Council - Report on risks faced by children online and policies to protect them*, www.oecd.org/sti/ieconomy/childrenonline_with_cover.pdf. [23]

OECD (2011), "The protection of children online: Risks faced by children online and policies to protect them", *OECD Digital Economy Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/5kgcjf71pl28-en. [2]

Ofcom (2017), *Children and Parents: Media Use and Attitudes Report*, www.ofcom.org.uk/__data/assets/pdf_file/0020/108182/children-parents-media-use-attitudes-2017.pdf. [19]

Ofcom (2016), *Children and Parents: Media Use and Attitudes Report*, www.ofcom.org.uk/__data/assets/pdf_file/0034/93976/Children-Parents-Media-Use-Attitudes-Report-2016.pdf. [20]

Parliament of New Zealand (2017), *Harmful Digital Communications Act 2015*, www.legislation.govt.nz/act/public/2015/0063/latest/DLM5711810.html. [22]

Perren, S. et al. (2010), "Bullying in school and cyberspace: Associations with depressive symptoms in Swiss and Australian adolescents", *Child and Adolescent Psychiatry and Mental Health*, Vol. 4/1, http://dx.doi.org/10.1186/1753-2000-4-28. [6]

Reyes, I. et al. (2018), ""Won't Somebody Think of the Children?": Examining COPPA compliance at scale", *Proceedings on Privacy Enhancing Technologies* 3, pp. 63-83, http://dx.doi.org/10.1515/popets-2018-0021. [26]

Sticca, F. and S. Perren (2013), "Is cyberbullying worse than traditional bullying? Examining the differential roles of medium, publicity, and anonymity for the perceived severity of bullying", *Journal of Youth and Adolescence*, Vol. 42/5, pp. 739-750, http://dx.doi.org/10.1007/s10964-012-9867-3. [7]

Strohmaier, H., M. Murphy and D. DeMatteo (2014), "Youth sexting: Prevalence rates, driving motivations, and the deterrent effect of legal consequences", *Sexuality Research and Social Policy*, Vol. 11/3, pp. 245-255, http://dx.doi.org/10.1007/s13178-014-0162-9. [17]

UNICEF (2012), *Child Safety Online: Global Challenges and Strategies. Technical report*, Innocenti Publications, www.unicef-irc.org/publications/652-child-safety-online-global-challenges-and-strategies-technical-report.html. [13]

Wolak, J. et al. (2018), "Sextortion of minors: Characteristics and dynamics", *Journal of Adolescent Health*, Vol. 62/1, pp. 72-79, http://dx.doi.org/10.1016/j.jadohealth.2017.08.014. [18]

Part IV. Children as digital citizens: Policies and partnerships to foster digital literacy and resilience

Chapter 11. Fostering digital literacy and well-being

Digital inclusion and skills are required to participate in different facets of daily life in the 21st century. Children need adequate digital access and skills, and they need to be resilient online and offline. This chapter explores how education systems foster digital literacy and well-being. It shows how countries employ a number of strategies to foster digital access and inclusion, while ensuring they have adequate social and emotional skills to maintain well-being online and offline. Countries also grapple with the challenge of promoting the use of digital technologies while also ensuring well-being, with many developing and disseminating guidelines recommending limits to children's exposure to screens. Equipping children with the right tools to be digital citizens requires education systems to ensure development of adequate digital, and social and emotional skills, while balancing the potential health effects associated with digital screen engagement.

Introduction

Fostering emotional well-being, digital skills and resilience in children is essential to ensure that they become confident, happy and productive contributors to society. It is also important in reducing inequalities in well-being outcomes. Education systems around the world should therefore take a holistic and integrative approach towards well-being, taking into account factors that can negatively affect well-being and inclusion in online and offline spaces. These approaches should promote both digital and social and emotional skills, build resilience and highlight "softer" digital skills such as content creation and collaboration.

Together, strong digital skills coupled with social and emotional skills lay the foundation for development of important skills such as digital literacy, online collaboration and communication, and computational thinking. This combination is important, as simply promoting digital access and skills is not enough to ensure inclusion and equal outcomes, especially for disadvantaged youth (see Chapter 9). Taking a strong, comprehensive approach to online and offline vulnerabilities and skills may help further reduce social inequalities, and promote resilience in online and offline spaces.

Following previous chapters in this volume, which explored the effects of digital technologies on children, including potential risks and benefits (i.e. social, informational, etc.), this chapter focuses on how systems promote digital access, skills and well-being through digital policies and guidelines. Ensuring full participation of children in 21st century society now and in the future requires systems to break down barriers to participation and access, and critically assess their emotional well-being from various perspectives, including important elements of digital inclusion and resilience.

Ensuring digital access and building digital skills

Digital divides have received considerable academic and policy attention over the years (Livingstone and Helsper, 2007[1]). Digital participation and skills can improve people's social and civic lives, with platforms providing spaces to seek help and foster social inclusion (OECD, 2018[2]), while on the other hand exposing them to risks (OECD, 2019[3]). A number of factors shape digital inequalities, such as access to materials, usage and skills. Some scholars stress the importance of policies targeting digital divides to address these issues simultaneously (Van Deursen and Van Dijk, 2015[4]; Van Deursen and Helsper, 2018[5]). Almost all students from OECD countries who participated in PISA 2015 reported having access to the Internet at home; however this average masks important differences between participating countries and economies. While access is near universal for children in countries such as Denmark, Finland, Iceland and Slovenia, access in OECD countries such as Chile, Mexico and Turkey ranges from 54% to just over 80%, which limits some children's access to information and participation in online spaces (OECD, 2017[6]). Addressing digital divides will help foster inclusiveness, and avoid compounding existing inequalities due to the digital transformation (OECD, 2019[7]).

Enabling access to digital technologies

The first digital divide refers to inequality in access to technology. This is an important issue to address, especially for already vulnerable populations (e.g. disadvantaged children). According to the countries that responded to the 21st Century Children Policy Questionnaire, some of the main factors that contribute to the first digital divide are:

- geographic distance

- restricted bandwidth
- inequality
- lack of school equipment/large gaps between schools regarding access
- lack of foreign language skills
- lack of teacher expertise.

Many of the countries that struggle with the first digital divide have large urban/rural divides such as Australia, Canada, Mexico and the United States. In many systems, it is concerning that teachers and schools do not have access to the most up-to-date software and digital knowledge, and between-school differences in broadband and hardware access persist. In TALIS 2018, 25% of school leaders reported a shortage or inadequacy of information and communication technology (ICT) for instruction as hindering the provision of quality instruction, while 35% of teachers reported that investing in ICT should be of "high importance" in terms of spending priorities (OECD, 2019[8]). A lack of online resources in local languages, along with factors such as lack of relevant content, high cost and lack of technological support can additionally act as barriers to individuals from disadvantaged communities using digital technologies and the Internet (Chen and Wellman, 2004[9]).

Policies and practices

Table 11.1 gives examples of national or regional initiatives to tackle the first digital divide. In some systems, hardware and software provision is done on a more local level. For example, in the Czech Republic, Mexico and Scotland (United Kingdom), either local authorities or individual schools set out plans to provide access to devices.

Table 11.1. Targeting the first digital divide

FATIH programme (Turkey)	The FATIH programme in Turkey provides hardware and software to schools, classrooms, teachers and students. For each school, the initiative aims to establish infrastructure, a multifunctional printer and high-speed Internet access, and teachers and students will have access to various resources such as email accounts, cloud software and learning resources. Initiated in 2010, this programme is conducted by the Ministry of National Education, supported by the Ministry of Transportation, and by 2019 has equipped 620 000 state schools with smartboards, and 17 million tablets to students, with one million tablets to teachers and administrators.
Digital Strategy for Schools 2015-2020 (Ireland)	The fourth pillar of Ireland's Digital Strategy, which targets all of education from the early years through higher education and beyond, is ICT infrastructure. It has made EUR 210 million available to education institutions and schools to purchase resources in line with identified national priorities. Receiving future funding depends on meeting certain conditions such as transparency regarding how the funding has been used, intentions being made clear for use of future funding, and evidence of a Digital Learning Plan.
National broadband plan (Ireland, Australia)	In Ireland, the National Broadband Plan aims to deliver high-speed Internet access across the country to citizens and businesses. Premises that do not have high-speed broadband have been identified, and a company is being appointed (through a competitive dialogue process) to build, maintain and operate the network over a 25-year period. In 2019 the Government approved the appointment of the "preferred bidder".[1] In Australia, the National Broadband Network is being rolled out, with expected completion in 2020.

Digital Learning and Teaching Strategy (Scotland)	This strategy, launched in 2016, is to ensure improved access to ICT for students. Other objectives include developing skill and confidence of educators in appropriate and effective use of digital technologies in the teaching and learning process, ensuring digital technologies are central considerations in curriculum and assessment delivery, and empowering leaders of change to drive innovation and investment in digital technologies for teaching and learning. This initiative is not funded at the national level; local authorities are responsible for funding improvements.
Cyberclasse and Cyber écoles (French Community of Belgium)	Between 2006-2013 cyberclasse used a EUR 85 million budget to equip over 800 000 students with ICT equipment. Wallonia provided infrastructure and equipment, with community-supported integration into educational contexts. Cyber écoles is an initiative involving multiple partners such as Wallonia, the French Speaking Community of Belgium and the German Speaking Community of Belgium. This project's goal is to equip schools with hardware, and started in 1998.
One2one (Luxembourg)	One2one is a national strategy to deploy iPads or iPad-type mobile devices in secondary and technical secondary schools. The *Centre de gestion informatique de l'éducation* (CGIE) put in place a programme to pluriannually acquire devices for high schools. The national strategy is based on an annual rental model.
Digital Glasgow Strategy (Scotland, United Kingdom)	Glasgow city council is expanding Wi-Fi availability to classrooms, increasing Internet speeds, and are rolling out a 1:1 project to all students and educational staff as part of the Digital Glasgow Strategy initiated in 2018. This project involves distributing 55 000 iPads and other digital technology devices, and placing digital leadership at the heart of School Improvement Plans. This initiative has been done in close collaboration with both national agencies and suppliers.

Note: It would be important also to have information on the effectiveness of these approaches (i.e. evaluation of progress or impact).
Source: 21st Century Children Policy Questionnaire

Access to digital devices in schools

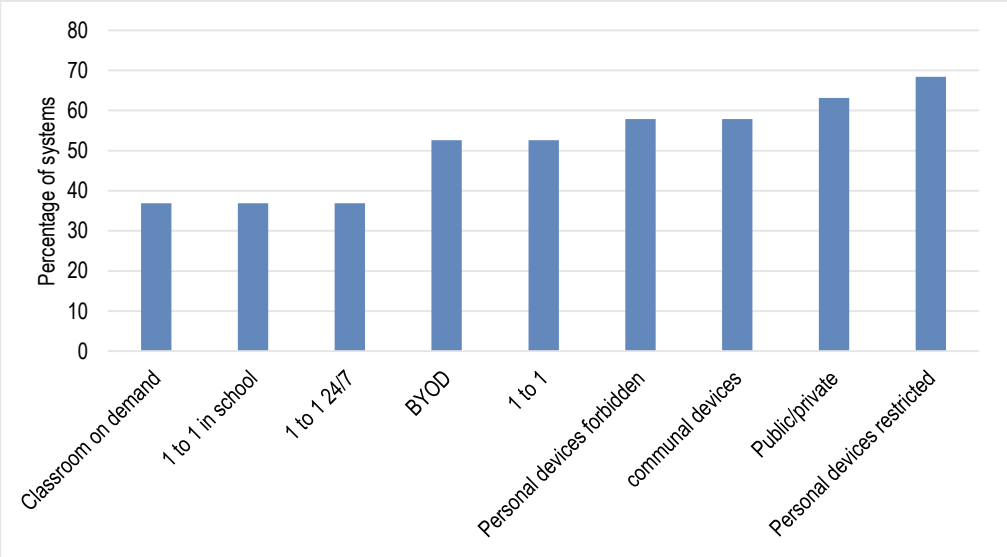
Policies targeting children's access to and use of digital devices in schools vary across systems. This can range from restricting or forbidding the use of devices in schools to providing devices that children can use both in school and bring home with them. In general, schools are adopting more individually owned forms of computing, rather than the traditional institutionally provided "shared" devices (Selwyn et al., 2017[10]). This is reflected in the responses to the 21st Century Children Policy Questionnaire shown in Figure 11.1; a number of systems report implementing one-to-one policies, which signifies that there is a one-to-one ratio of devices to learners, or bring your own device (BYOD) schemes.

Some systems do not legislate BYOD or one-to-one computing in schools, but rather provide schools with information to help them implement school-based policies. For example, the Western Australia Department of Education has a website outlining the steps schools can take to implement BYOD practices, as well as information on implementing ICT-rich classrooms, focusing on equity, affordability, scalability and sustainability (Department of Education, n.d.[11]). Guidelines such as those developed by the Department of Education of New South Wales (Australia) suggest ensuring completion of a signed BYOD agreement from students and parents/caregivers. Other recommendations include involving community consultation in developing school policies, and that prior to implementation of a BYOD policy, information should be given to key stakeholders such as parents, teachers, caregivers and students (NSW Department of Education, 2018[12]).

In some contexts, whole-school policies are promoted to address the use of digital devices. For example, Circular 0038/2018 issued in Ireland in 2018 sets out guidelines to set policies on incorporating digital devices in the school environment. It suggests that relevant policies in schools can address acceptable usage, cyberbullying, data protection, BYOD and well-being to ensure safe and ethical Internet use. According to the literature, opting for a whole-school approach to online safety and usage issues is effective (Hooft Graafland, 2018[13]).

Figure 11.1. Policies on the use of devices in schools or classrooms

Countries responding "yes" to the question: Do you have any of the following national or regional policies or recommendations regarding the use of devices in schools or classrooms?



Note: Respondents could choose more than one option. 19 systems responded to this item.
1 to 1 access suggests a 1 to 1 ratio of devices to students.
Classroom on demand: 1:1 ratio of devices to students in a classroom; students do not keep devices with them throughout the day.
1 to 1 in school: students keep devices with them throughout the day; devices are not taken home with students.
1 to 1 24/7: students are assigned a device that they keep throughout the year and can take home to use for schoolwork.
Source: 21st Century Children Policy Questionnaire

Device access is often regulated at the level of the school, and one-to-one or BYOD programmes can look very different in different schools. Some examples include:

- simply bringing a device that complies with the school's computer network
- 'managed BYOD programme' where students lease or purchase one of four specified laptop models
- programmes where students buy/are loaned a tablet (Selwyn et al., 2017[10]).

It might be important to assess the types of devices to which children are gaining access. For example, being able to access the Internet on mobile devices (i.e. a mobile phone or tablet) reduces the divide in access, however the possibility exists for new inequalities to emerge in terms or skills and usage patterns (Mascheroni and Ólafsson, 2016[14]). No matter the methods that schools use to equip students with ICT and digital technology, mitigating social inequalities or divides should be at the forefront of any policy. Ensuring that policies are not exclusionary and that they promote equal access to digital devices is crucial in combatting digital as well as social divides.

Box 11.1. Leave your devices at home

While bring your own device policies are gaining traction in schools, some systems are taking a different approach: 11 systems responding to the 21st Century Children Policy Questionnaire reported forbidding personal devices in school. Additionally, 13 systems restrict the times that students can use personal devices during school hours.

Forbidding children to use their devices, or even from bringing them to school, has given rise to discussions in a number of countries around human rights. For example, in 2017 The National Human Rights Commission of Korea (NHRCK) ruled that cell phone bans or confiscation at school violate students' freedom of communication, specifically Article 18 of the Constitution, which stipulates that the "privacy of correspondence of no citizen shall be infringed," as well as the students' unalienable rights to pursue happiness (Lee, 2016[15]). This ruling followed the implementation of a ban on cell phone use during school hours by a middle school in Gyeonggi Province. Students subsequently filed a petition for this policy to be overturned. The NHRCK suggested that schools implement a more detailed policy, such as a restriction of cell phone use in class rather than an all-out ban.

In 2018, French lawmakers banned smartphones and other Internet-connected devices in schools. This ban applies to schoolchildren between age 3 and 15, while high schools may choose to implement them on a school-by-school basis. Smartphones were already banned since 2010 during teaching activities. The new law makes exceptions for certain groups of students (e.g. those with disabilities) or when smartphones are used for "pedagogical" purposes (Ministère de l'Education nationale, 2018[16]). Greece also has a ban on personal devices at the national level. Sub-nationally legislated bans tend to be more common and are implemented in the French community of Belgium, Ontario (Canada), Latvia, Mexico, Portugal, Scotland, Spain, Switzerland, Turkey and the United States. The New South Wales (Australia) Department of Education implemented a restriction on mobile devices in public primary schools in December 2018 (NSW Department of Education, 2018[12]).

Access to devices alone is not sufficient to ensure equality in digital opportunities, and leads to questions about factors that have an impact on use, such as social and cultural factors (Livingstone and Helsper, 2007[1]). Closing the first digital divide through enhancing citizen access, such as through the provision of broadband, can help reduce inequalities. Providing home Internet access in low-income households can help close the gap in use, potentially reducing disadvantage (Livingstone and Helsper, 2007[1]). Furthermore, patterns in inequalities in certain device usage or ownership can differ based on a number of factors such as country of residence, experience with the Internet and age of the child. For example, parental use of smartphones or tablets may be a stronger predictor of smartphone usage than socio-economic status (Mascheroni and Ólafsson, 2016[14]).

Promoting digital skills and inclusion

The 21st century saw a shift in importance from physical access to digital technologies, to skills and usage (Van Dijk, 2017[17]), with the emergence of the notion of the second digital divide (Hargittai, 2002[18]). Research suggests that despite their reputation as so-called "digital natives", 21st century children still face inequalities in access, motivations, usage and skills regarding the Internet (Mascheroni and Ólafsson, 2016[14]) (also see Chapter 9). As with the first digital divide, demographic factors influence motivations for using the Internet. Some demographic factors that have an impact on Internet skills and digital

exclusion include gender, age, income, employment and disability; however, some findings suggest that "what people do online and the skills they have are more important than who they are when it comes to inequalities in outcomes of Internet use" (Van Deursen and Helsper, 2018[5]).

Box 11.2. DigComp 2.0

The European Commission's Digital Competence Framework 2.0

The European Commission started the Digital Competence Framework project in 2010, with the aims of identifying the key components of Digital Competence regarding knowledge, skills and attitudes necessary to be "digitally competent". For policy makers, it can be used to monitor the digital skills of citizens and support curricula development.

DigComp 2.0 highlights 5 key components of digital competence:

1. information and data literacy
2. communication and collaboration
3. digital content creation
4. safety
5. problem solving.

Each competence dimension features a number of sub-dimensions. For example, dimension 2, communication and collaboration, features interacting through digital technologies, sharing through digital technologies, engaging in citizenship through digital technologies, collaborating through digital technologies, netiquette and managing digital identity as relevant sub-dimensions.

European Union Member states have endorsed the framework, and have used it in different ways including to enhance teacher professional development, for student assessment, for employability purposes, and for policy support and framework implementation. For example, Spain based the development of the Common Framework for Teacher Digital Competence on DigComp, while the Norwegian Centre for ICT in Education uses it as a reference to develop a digital competence framework of their own.

Source: European Commission (2019[31])

Policies and practices

Countries take many different approaches to target the second digital divide. Many approaches focus on different factors associated with the promotion of digital skills and inclusion; these can be holistic, and can be part of broader strategies also targeting lifelong learning, or encompass higher education as well as compulsory education. For example, in Ireland (ICT Skills Action Plan) and Portugal (InCoDe.2030), wide-ranging policies with different pillars and targets are implemented to address the second digital divide. In contrast, in Australia, for example, a number of more targeted policies tackle different elements of the issue such as teacher education and curriculum development. Generally, policy and action plans target curriculum or support for curriculum implementation, learning frameworks, teacher education, extracurricular activities, or provide information to stakeholders on how to target digital skills and inclusion of children; some examples are summarised in Table 11.2.

Tackling the second digital divide is a priority in many systems given the increasing emphasis on digital methods to deliver lessons, test students and for student studying. For example, national tests in Sweden are currently being digitalised, and will be implemented throughout all school forms and for all subjects that have national tests. Systems such as Korea and Russia are also integrating digital textbooks into their classrooms.

Table 11.2. Targeting the second digital divide

Examples of policies and practices to tackle the second digital divide.

Target	Examples
Curriculum & implementation	**Digital Technologies in Focus (Australia):** this programme provides support for disadvantaged schools in implementing the Australian Curriculum: Digital Technologies through specialist digital technologies and provision of ICT Curriculum Officers. **Digital Literacy School Grants (Australia):** this initiative funds projects in schools supporting innovative ways of implementing the curriculum. Priority is given to under-represented and disadvantaged groups. **Digital Technologies Hub (Australia):** provision of learning resources and activities to help support implementation of the curriculum. **2020 Curriculum (Norway):** the new curriculum in Norway for 2020 will include digital skills. **ICT Skills Action Plan (Ireland):** Ireland has implemented three Skills Action Plan reforms, the most recent of which was implemented in 2019. The recently concluded 2014-2018 Action Plan included provisions for promoting career opportunities to primary and secondary level students, involved curricular reform, and provision of ICT-related professional development opportunities for teachers. **InCoDe.2030 (Portugal):** ICT has been expanded in the basic curriculum, first in a pilot of 223 schools. This was then integrated into curricular matrices of all the years of basic education across all schools. **Saskatchewan's Practical and Applied Arts curricula (Saskatchewan, Canada):** this redesigned curriculum for k-12 includes robotics, automation and computer science.
Learning framework & school-based strategies	**Digital Learning Framework for Schools (Ireland):** rolled out in the 2018/2019 school year, this is one component of the Digital Strategy for Schools 2015-2020. Schools and teachers are given a structure allowing them to identify where they are in terms of embedding digital technologies into teaching and learning, and how they can progress in this domain. **National Reference Framework (Luxembourg):** the national reference framework is due for implementation in 2019. **"Pact of Excellence" (French Belgium):** each school will devise a strategy for integrating digital schools into learning and the governance of the school, with the aim of closing the digital divide. **Digital Action Plan for Education and Higher Education (Quebec, Canada):** this action plan supports and guides the integration of new technologies in schools. It aims to achieve effective and optimal integration and use of digital technologies to promote lifelong skills development and maintenance. **Digital Education Strategy (Czech Republic):** this initiative, proposed for 2020, aims to ensure non-discriminatory access to digital educational resources, ensure conditions for development of digital skills in students and teachers, ensure the reinforcement of educational infrastructure, and to encourage the integration and understanding of digital technologies into schools. **National Strategy for the digitalisation of the Swedish school system 2017-2022:** digital competence is one of the three main pillars of this national strategy, alongside equity in access and usage of digital tools, and research and evaluation on the effects of digitalisation in school.

Teacher education	**Digital Technologies MOOCs (Australia):** these courses offered by the University of Adelaide offer free professional development for teachers on the Australian Curriculum: Digital Technologies. **ICT Skills Action Plan (Ireland)**: training opportunities to promote digital skill development in learners. **InCoDe.2030 (Portugal)**: professional development for teachers is one component of InCoDe.2030. This includes MOOCs, learning laboratories and events such as training workshops. **FATIH (Turkey)**: teacher professional development in this programme includes technology use, field-based training and content development.
Extracurricular opportunities	**digIT (Australia)**: these ICT summer schools target year 9-10 students from groups that are under-represented in STEM fields, and gives them the chance to attend a digital technology summer school, including an additional five months of mentoring and a follow-up residential school.
Online resources	**InCoDe.2030 (Portugal)**: development of digital educational resources on topics such as digital citizenship are underway. **Australian Digital Technologies Challenge**: this programme offered by the University of Sydney provides access for year 5-8 students to free online learning activities related to the curriculum. "Dive into Code" offers activities and challenges about coding for year 4-12 students.

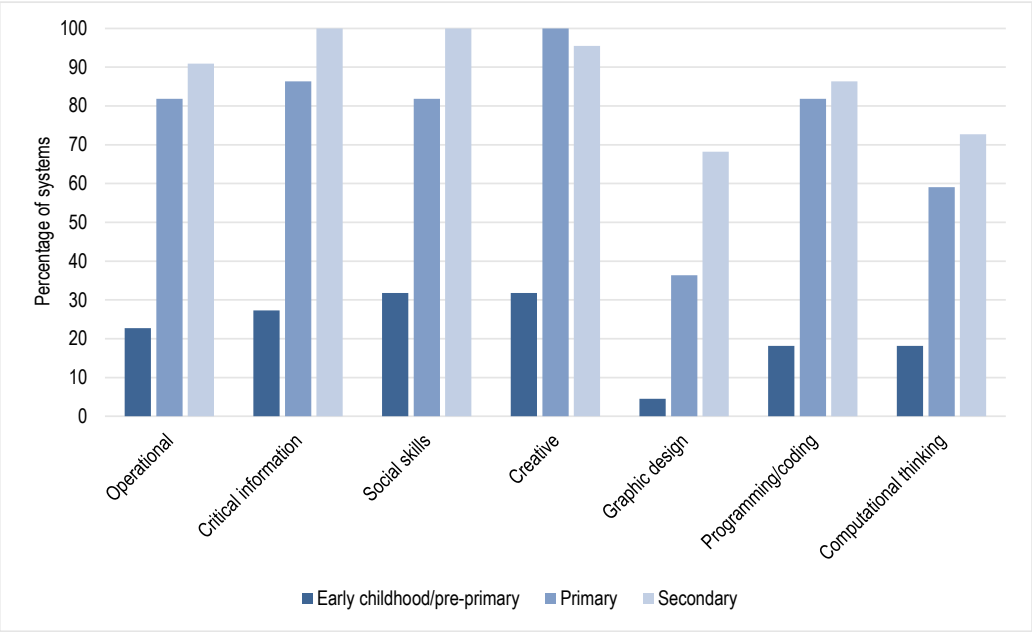
Source: 21st Century Children Policy Questionnaire

Digital skills in the curriculum

Teaching digital skills is essential in this day and age, especially as many economic and social interactions require mastery of some digital skills. Furthermore, promoting digital literacy in schools will help young people recognise risks online (OECD, 2018[2]). The 21st Century Children Policy Questionnaire queried at which level of education various "hard" and "soft" digital skills are taught (see Figure 11.2).

Figure 11.2. Learning digital skills at different levels of education

Systems were asked if the following skills were taught, and if so at which level of education



Note: 22 systems responded to this part of the Policy Questionnaire.
Source: 21st Century Children Policy Questionnaire

Most systems explicitly teach operational, critical informational, social and creative skills in primary and secondary school. There is less of a focus at all levels of education on graphic design, programming/coding and computational thinking, and generally there is more of a focus on digital skills in general in secondary than in primary education or earlier. Approaches targeting digital skills often overemphasise the role of basic operational skills, despite the indication that combining skills such as social and creative skills, and the capacity to create digital content, can generate positive tangible outcomes (Helsper, Van Deursen and Eynon, 2015[28]). It is therefore encouraging to note the emphasis on critical information, social and creative skills in many systems, alongside basic operational skills.

Box 11.3. Digital divides for teachers

Systems take a number of approaches to provide access to digital technologies. However, access to software or hardware does not directly translate into good pedagogical practice, and access to these tools does not necessarily ensure integration into classroom activities (Earle, 2002[19]). To be effectively implemented as a learning device in the classroom, teachers require technological knowledge and digital competence, as well as pedagogical and content knowledge (Voogt et al., 2013[20]). When teachers are able to effectively integrate technologies into their practice it can add value to traditional instruction (OECD, 2016[21]). Teachers who are confident and possess the necessary skills can employ practices such as blended learning, which can help them improve differentiation of instruction according to student needs and foster classroom interaction (Paniagua and Istance, 2018[22]).

Some pre-service teachers have limited experiences learning with ICT in their training (Lei, 2009[23]; Voogt et al., 2013[20]), and in some instances the training they receive is of poor quality (Gudmundsdottir and Hatlevik, 2018[24]). According to TALIS 2018, only 56% of teachers in OECD countries received training in the use of ICT for teaching as part of their formal education or training, and only 43% felt well or very well prepared for this when they had completed their initial teacher education (OECD, 2019[8]). As was the case in TALIS 2013, teachers still report a high level of need for professional development in ICT skills for teaching, second only to teaching students with special needs (OECD, 2019[8]; OECD, 2014[25]). It is essential for teachers to receive quality training in the use of digital tools to integrate ICTs effectively into their practice. Teachers who are confident in their ICT abilities and who recognise the added value of ICT for teaching and learning report higher levels of ICT use during lessons (European Commission, 2013[26]), and professional development has been linked to teacher confidence (Valtonen et al., 2015[27]).

Responses to the 21st Century Children Policy Questionnaire highlight that in the majority of systems, teachers receive training in digital skills (i.e. their abilities to use digital technologies) and in the use of technology in teaching. However, teachers are not necessarily trained in a number of other important digital competencies such as assessing online risks to students and in educating students in digital literacy or digital citizenship. Teacher education at both the initial preparation and continuing professional development levels will have to expand to better prepare and support teachers to teach these important 21st century skills.

Teaching and assessing digital skills is imperative, as individuals with lower levels of skills will be less able to access information and make use of various online resources (Van Deursen and Helsper, 2018[5]). Furthermore, the level of these skills varies across different

socio-demographic groups (Van Deursen, Helsper and Eynon, 2016[29]; Van Deursen et al., 2017[30]). It is therefore important to assess the skills different disadvantaged groups are lacking, and tailor trainings and interventions to reduce inequalities (Van Deursen and Helsper, 2018[5]).

Developing social and emotional skills to foster (online & offline) well-being

To thrive in the digital economy, digital skills alone are not enough. Children and adults alike require skills such as numeracy and literacy, as well as social and emotional skills that promote collaborative working and flexibility (OECD, 2016[32]). Many systems are incorporating social and emotional skills into (sub) national curricula. These are important for dealing with and preventing emotional well-being challenges and fostering positive child development, and can form the basis for digital citizenship and understanding "netiquette" (see Chapter 12). Furthermore, some research supports the notion that engaging in cyber aggression is related to lower rates of social competence, and higher rates of loneliness (Schoffstall and Cohen, 2011[33]).

Table 11.3. Integrating social and emotional skills into the curriculum

	Name of programme	Type of programme	Skills and content addressed
France	Réforme du bac (Reform of the French Baccalaureate)	Curricular and regulatory	New oral exam for which the preparation of high schoolers consists of working on their public speaking skills to build confidence and self-esteem
Ireland	Aistear (Early Childhood Curriculum Framework for children from birth to 6 years)	Curricular	For use in early years and primary school settings Themes: Well-being and Identity and Belonging Developing secure attachments, becoming emotionally strong and developing resilience to deal with challenges and difficulties
Ireland	Social Personal and Health Education (SPHE) curriculum	Curricular	Developing self-awareness to build self-esteem and awareness of diversity for more meaningful connection in school and life
Norway	Curriculum reform and legislation regarding the School Health Service (2017)	Curricular and regulatory	Introduction of life skills and learning about mental health as a cross-curricular theme Lay out guidelines clarifying the professional requirements regarding organisation, number of health workers/nurses and professional standards
Portugal	Student Profile by the End of Compulsory Schooling (Perfil dos Alunos à Saída da Escolaridade Obrigatória, PA)	Curricular	Development of Interpersonal relationships and aims to help students recognise, express and manage emotions, build relationships, and respond to personal and social needs
Scotland	Health and Well-Being area (Curriculum for Excellence)	Curricular	Developing self-awareness, self-worth and respect for others Meet challenges, manage change and build relationships Build resilience and confidence (for dealing with school-related anxiety and stress) Developing well-being and social skills Acknowledge diversity and learn how to challenge it
Korea	Child Welfare Act, School Health Act, Character Education Promotion Act	Curricular and regulatory	Strengthen character education as a way of addressing school-related stress

Source: 21st Century Children Policy Questionnaire

Developing social and emotional skills is often a key part of effective prevention programmes for a range of emotional well-being concerns. Skills such as communication, problem solving, coping and insight building are important for building resilience in online

and offline spaces. In this sense, there is great potential to include and integrate these skills across the curriculum as many systems do, as shown in Table 11.3.

Developing social and emotional skills, digital skills, and bolstering resilience in children are important to ensure online inclusion. However, other systemic issues such as poverty and inequalities as well as discrimination against children with ethnic or cultural minority backgrounds makes children more vulnerable to negative online experiences such as cyberbullying and grooming. Children with disabilities are also more likely to encounter more online risks (Livingstone and Palmer, 2012[34]). Therefore, interventions for vulnerable groups and policies tackling root causes of inequalities should supplement skills approaches in ensuring child well-being.

Screen time guidelines and the importance of evidence in promoting well-being

With the rise in use of digital technologies both in and out of the classroom, screen time is an issue that has gained much attention as a "threat" to children's emotional and physical well-being. The literature in this area is not extremely well-developed and tends to be inconsistent, and it is thus difficult to root guidelines in strong and robust evidence (Gottschalk, 2019[35]). While "how much is too much" is an important, although unanswered question, research on the "Goldilocks hypothesis", for example, suggests policy makers should widen the scope of the debate by also asking "how much is too little". Using digital technologies poses risks to children on the one hand, but on the other provides opportunities to foster important skills, and enhance well-being through promotion of protective factors such as the reinforcement of relationships.

A number of OECD countries have developed guidelines regarding screen time and children, however these are not consistently developed and implemented across countries and they come in many forms. Some countries establish screen-only guidelines, whereas in other countries screen time guidelines are incorporated into broader guidelines such as those focused on physical activity (thereby classifying screen time as sedentary behaviour or time). These can be disseminated by national ministries, non-governmental organisations or public operators under supervision of a national ministry, or, as is the case in a few systems, they are recommended by national health-related bodies. In Australia and New Zealand, for example, guidelines are set by their respective governmental Departments/Ministries of health, while in Canada and the United States guidelines are proposed by the Canadian Paediatric Society and the American Psychological Association and American Academy of Pediatrics (AAP). The AAP guidelines, as well as the Canadian guidelines as set by the Canadian Society for Exercise Physiology (CSEP), have been influential in other OECD countries. For example, the CSEP guidelines have been used in the development of guidelines from the New Zealand Ministry of Health, and the AAP guidelines are often adhered to in lieu of establishing a separate national set of guidelines.

Screen time guidelines/policies can generally be grouped according to the following:

- general, age-based limits – not specific about type of screen used, time limits are based on age
- age and activity focused limits – stipulations for age and type of activity
- general recommendations – the same recommendation for all children, without age or activity stipulations.

Generally, limitation-focused guidelines suggest under two hours of sedentary screen time for school-aged children and have been questioned by researchers in developmental and

clinical fields (Linebarger and Vaala, 2010[36]; Ferguson and Donnellan, 2014[37]). Arguably, two hours is an arbitrary limit, as there is little research supporting this strict cut-off and moderate use of digital devices even in excess of two hours can have positive implications for both emotional and academic development (Przybylski and Weinstein, 2017[38]; OECD, 2017[6]). Limitation-focused guidelines tend to overlook the convergence between online and offline play and social spaces that children and adolescents are establishing in the 21st century (Marsh, 2014[39]). Sweeping bans or limits on screen time or technology use may not adequately take into account the nuances regarding how children and adolescents engage with devices, and overemphasise the potential for the "displacement effect", which is contentious in the scientific community (see Chapter 8).

Age-based guidelines can be difficult to implement for families with more than one child, especially those that suggest little to no screen time for younger children. If a young child is engaging in their daily 30-minute or hour-long allotment of screen time, it might be difficult to prevent a younger sibling, say a baby or toddler, from seeing the screen. Especially when guidelines suggest that screens are only to be used in communal areas, restrictive guidelines of this nature could be overlooking the realities of daily lives in mixed-age families.

What children are using digital technologies for and why is probably a more important factor than how much they engage with them. Some evidence suggests that watching age-appropriate, high quality programming may promote certain cognitive benefits, while "co-viewing" (i.e. engaging in screen time with a parent or caregiver) can enhance infant attention and their propensity to learn from on-screen content (Gottschalk, 2019[35]). This can be referred to as "scaffolding" and suggests caregivers pose questions, and give descriptions and labels during viewing (Barr et al., 2008[45]).

Despite the proliferation of research on child outcomes resulting from technology use, policy makers need more robust evidence in order to make clear and effective guidelines for technology use in children. Some of the main challenges in the available research, as outlined in the above sections, include a lack of quality research and coherence, issues with study design, trouble ascertaining correlation versus causation and there is a large focus of the negative effects of technology. This is unbalanced with the potential positive effects.

When formulating guidelines, there are some insights from high quality research that can be taken into account. For example, it has been suggested that moderate use of screens, even in excess of many national recommendations or those of the AAP, is not associated with problematic outcomes such as delinquency, risky behaviours, reduced grades or mental health problems (Ferguson, 2017[46]). Moderate use might even be advantageous for children, according to the notion of the "Goldilocks Hypothesis". The risks to mental well-being of adolescents may be minor, although the effects vary based on factors such as type of media used and when it is used (i.e. during the week or weekend) (Przybylski and Weinstein, 2017[38]). Negative outcomes have been associated with media consumption in excess of 6 hours per day (Ferguson, 2017[46]), however the association with mental well-being is small (Przybylski and Weinstein, 2017[38]).

Table 11.4. Screen time guidelines

Country/institution	Infants/toddlers	Early childhood	School-age - adolescence	Other recommendations
General age-based limits				
Australian Government Department of Health	None (under 12 months); <1 hour (12-24 months)	<1 hour	<2 hours (entertainment)	
Canada, Canadian Society for Exercise Physiology & Canadian Paediatric Society	None	<1 hour	<2 hours (CSEP only)	Limited sitting for extended periods (CSEP); Adults model healthy screen use (CPS)
German Federal Ministry of Health	None	30 minutes	1 hour (primary school) 2 hours (adolescents)	Avoid as much as possible; avoid screen time completely for children under 2 including background television
Latvia, Center Dardedze	None before age 2	Not to use every day, and only for between 15-20 minutes at a time, not more than 30 minutes per day		Based on AAP guidelines; Emphasis on safe and age-appropriate content, parental oversight, and avoid using devices as reward/punishment
New Zealand Ministry of Health	None	<1 hour	<2 hours (recreational)	Adapted from CSEP guidelines
United States, American Academy of Pediatrics	None, except video chatting (under 18 months); Only high quality programming (18-24 months)	1 hour of high quality programming, co-view	Consistent limits on time and type	Turn off screens when not in use; ensure screen time does not displace other behaviours essential for health
Age and activity focused limits				
Belgium (French Speaking Community), Yapaka programme	Under 3: No television, and avoid all screens	Between 3-6: avoid screens in the bedroom, avoid access to gaming consoles	Between 6-9: no Internet alone, set clear rules on screen time, avoid screens in the bedroom. Between 9-12: no social networking From age 12: Child can surf the Internet alone, agrees to online schedule	At all ages, set limits around the type of programmes and screen time, encourage creativity
France*, Le centre pour l'éducation aux médias et l'information	Under 3 : no television, tablets with tactile features are not a priority but can be used as a complement to traditional games, always with a parent	Between 3-5: < 90 minutes per day. Before 6: multi-player video games should be used rather than single-player and can be played occasionally, avoid a personal gaming console; establish clear rules on screen time	From 6: < 2 hours per day Between 6-9: clear rules on screen time established From 8: explain rights such as the right to privacy	No screens in the morning; no screens during meal time; no screens in the evening before bed; no screens in a child's bedroom; one hour of screen time should be followed by one hour of non-screen activities

			Between 9-12: continue establishing clear rules on screen time; explain particularities of Internet From 12: Children can surf the Internet alone	
Switzerland, *Jeunes et Medias*	Under 3: no television	Between 3-5, 30 minutes of television with parents, DVDs are more suitable for under 4s than television. Before 6: no personal gaming	Between 6-9: no Internet Between 9-12: no social networks	Avoid screen time before bedtime; parents should test apps before children use them; involve children in screen time negotiations; do not use electronic games as rewards/punishment
		General guidelines		
Finland	< 2 hours of screen time per day; do not spend more than 2 hours in a row sitting down; engage in at least two hours per day of strong physical exercise			
Luxembourg	Bee Balanced Online & Offline: for every hour online, spend one hour offline; screens and devices should be turned off at night; parents and children should negotiate screen time, not including screen use for academic activities or homework; co-viewing is recommended for young children			
South Korea	Shutdown of online gaming systems for children under 16 between 12 and 6am			
United Kingdom, Royal College of Paediatrics and Child Health	Families negotiate screen time; to determine if screen time is problematic, can pose four questions: Is screen time controlled? Does it interfere with what your family wants to do? Does it interfere with sleep? Is snacking during screen time controlled? If there are no problematic responses, screen time probably does not pose a problem in the family; otherwise the guidelines provide tips to reduce screen time			

Source: 21st Century Children Policy Questionnaire and Gottschalk (2019[35])

Box 11.4. Korea's "shutdown law" and paediatric sleep

Screens may not be responsible for "destroying a generation", but are they affecting sleep? A systematic review of the literature found an adverse relationship between sleep outcomes and screen time (Hale and Guan, 2015[40]) and a recent study suggested that each hour devoted to digital screen time was associated with only a 3-8 minute reduction in nightly sleep and lower sleep consistency (Przybylski, 2019[41]). Methodological limitations (i.e. relying on self-report for both sleep hours and screen time hours, which tend to be unreliable and prone to over and under-reporting especially for screen time (Scharkow, 2016[42])) impede researchers from determining causation, and the evidence tends to be inconsistent. Despite these limitations and results suggesting relatively small effects of screens on sleep, the relationship between sleep and digital technology use has garnered much attention from parents, teachers and policy makers.

In November 2011, in an attempt to curb what was deemed excessive gaming and enhance sleep outcomes, the Korean government legalised the blocking of online games for children under the age of 16 between midnight and 6am. The results of this effort were mixed: One study examining the effects of the ban suggested an increase in sleep duration of only 1.5 minutes; however, the increase was only significant for female sleep duration (increase of 2.7 minutes) and was not significant for the males in the sample (Lee, Kim and Hong, 2017[43]). Another study found an immediate reduction in daily minutes of Internet use, however there were no long-term improvements as measured four years after implementation. The researchers found no effects on sleeping hours (Choi et al., 2018[44]). These results are consistent with the notion that Internet use likely does not displace other activities (see more about the "displacement hypothesis" in Chapter 8), and that comprehensive approaches to managing screen time and paediatric sleep might be better suited than administering simple bans.

There are some new challenges faced by researchers and policy makers as technology evolves and children's habits change. For example, the notion of "screen-stacking" or media multitasking (i.e. using more than one technological device at the same time) is a relatively new and understudied phenomenon that may have implications for children's cognition, behaviour, neural structure and academic outcomes (Uncapher et al., 2017[47]).

Some results that have been quite consistent across the research include:

- Blue light from screens may affect melatonin production and sleep – alongside good sleep hygiene, limiting blue light exposure right before bedtime can help mitigate this.
- Moderate Internet use can help children build rapport with their peers, and does not appear to displace engaging in physical activity or other health-promoting behaviours.
- Not all media is created equal – passive versus active engagement, violent versus entertainment versus educational content, and age-appropriateness can impact child outcomes.
- Co-viewing provides opportunities for "scaffolding", and can help children understand content; quality time with parents/caregivers might be more important than the type of activity engaged in together (i.e. screen versus non-screen).

The recently published guidelines by the Royal College of Paediatrics and Child Health in the United Kingdom are a good example of using the evidence to generate guidelines. The summary of the research concludes that the evidence of harm tends to be overstated, and the negative effects screens may have on children are contested (RCPCH, 2019[48]). Due to the weak evidence, the guidelines suggest negotiating screen time within the family based on the needs of individual children, and that families should answer four questions (presented in Table 11.4); if families are satisfied with their answers, they are likely to be doing well in terms of screen use in the family. The guide ends with recommendations regarding how families can reduce screen time, if they feel the need to do so. This includes protecting sleep displacement via screen use, prioritising face-to-face interaction and being cognisant of parental media use, as children tend to learn by example (RCPCH, 2019[48]).

In sum

Governments and education ministries can, and do, play an important role in fostering digital literacy and well-being in children. There are many good examples of incorporating digital literacy and well-being into national curricula, and initiatives to upskill teachers, to disseminate information to parents and families, and to provide opportunities to children inside and out of the classroom to foster their digital skills and social and emotional competences. The overlap between different digital skills and social and emotional skills means that comprehensive well-being and digital frameworks can feature both skill sets, to ensure children are safe and happy both on and offline.

Developing effective policies becomes more difficult in the absence of good quality data, as is the case with screen time. Taking a top-down approach, as is done with promoting national guidelines regarding screen time, can be an effective approach if it is based on robust evidence. However, due to the inconsistencies in the literature and misinformation in the media, policy makers can struggle with this issue. Approaching child well-being and screen time in a holistic sense therefore, as is seen in the example of the United Kingdom's 2019 screen time guidelines, can be an effective way for governments to move forward, without taking overly restrictive or ineffective approaches.

Note

[1] "Preferred bidder" is a procurement term, referring to the bidder that has been selected following the evaluation process. It represents the company to which the contract is intended to be awarded, following the finalisation of financial and legal documents.

References

Barr, R. et al. (2008), "Infants' attention and responsiveness to television increases with prior exposure and parental interaction", *Infancy*, Vol. 13/1, pp. 30-56, http://dx.doi.org/10.1080/15250000701779378. [45]

Chen, W. and B. Wellman (2004), "The global digital rivide—Within and between countries", *IT&Society*, Vol. 1/7, pp. 39-45. [9]

Choi, J. et al. (2018), "Effect of the online game shutdown policy on Internet use, Internet addiction, and sleeping hours in Korean adolescents", *Journal of Adolescent Health*, Vol. 62/5, pp. 548-555, http://dx.doi.org/10.1016/j.jadohealth.2017.11.291. [44]

Department of Education (n.d.), *Personally Owned Device/Bring Your Own Device*, http://det.wa.edu.au/intranet/podprogram/detcms/portal/. [11]

Earle, R. (2002), "The integration of instructional technology into public education: Promises and challenges", *Educational Technology*, Vol. 42/1, pp. 5-13, http://dx.doi.org/10.2307/44428716. [19]

European Commission (2019), *DigComp | EU Science Hub*, https://ec.europa.eu/jrc/en/digcomp. [31]

European Commission (2013), *Survey of Schools: ICT in Education; Benchmarking Access, Use and Attitudes to Technology in Europe's Schools*. [26]

Ferguson, C. (2017), "Everything in moderation: Moderate use of screens unassociated with child behavior problems", *Psychiatric Quarterly*, Vol. 88/4, pp. 797-805, http://dx.doi.org/10.1007/s11126-016-9486-3. [46]

Ferguson, C. and M. Donnellan (2014), "Is the association between children's baby video viewing and poor language development robust? A reanalysis of Zimmerman, Christakis, and Meltzoff (2007)", *Developmental Psychology*, Vol. 50/1, pp. 129-137, http://dx.doi.org/10.1037/a0033628. [37]

Gottschalk, F. (2019), "Impacts of technology use on children: Exploring literature on the brain, cognition and well-being", *OECD Education Working Papers*, No. 195, OECD Publishing, Paris, https://dx.doi.org/10.1787/8296464e-en. [35]

Gudmundsdottir, G. and O. Hatlevik (2018), "Newly qualified teachers' professional digital competence: Implications for teacher education", *European Journal of Teacher Education*, Vol. 41/2, pp. 214-231, http://dx.doi.org/10.1080/02619768.2017.1416085. [24]

Hale, L. and S. Guan (2015), "Screen time and sleep among school-aged children and adolescents: A systematic literature review", *Sleep Medicine Reviews*, Vol. 21, pp. 50-58, http://dx.doi.org/10.1016/J.SMRV.2014.07.007. [40]

Hargittai, E. (2002), "Second-level digital divide: Differences in people's online skills", *First Monday*, Vol. 7/4, http://dx.doi.org/10.5210/fm.v7i4.942. [18]

Helsper, E., A. Van Deursen and R. Eynon (2015), *Tangible Outcomes of Internet Use: From Digital Skills to Tangible Outcomes project report*, www.oii.ox.ac.uk/research/projects/?id=112. [28]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [13]

Lee, C. (2016), "Human rights watchdog opposes ban on students' cellphone use in Korea", *The Korea Herald*, www.koreaherald.com/view.php?ud=20160623000895. [15]

Lee, C., H. Kim and A. Hong (2017), "Ex-post evaluation of illegalizing juvenile online game after midnight: A case of shutdown policy in South Korea", *Telematics and Informatics*, Vol. 34/8, pp. 1597-1606, http://dx.doi.org/10.1016/j.tele.2017.07.006. [43]

Lei, J. (2009), "Digital natives as preservice teachers: What technology preparation is needed?", *Journal of Computing in Teacher Education*, Vol. 25/3, https://files.eric.ed.gov/fulltext/EJ835233.pdf. [23]

Linebarger, D. and S. Vaala (2010), "Screen media and language development in infants and toddlers: An ecological perspective", *Developmental Review*, Vol. 30/2, pp. 176-202, http://dx.doi.org/10.1016/j.dr.2010.03.006. [36]

Livingstone, S. and E. Helsper (2007), "Gradations in digital inclusion: Children, young people and the digital divide", *New Media & Society*, Vol. 9/4, http://dx.doi.org/10.1177/1461444807080335. [1]

Livingstone, S. and T. Palmer (2012), *Identifying vulnerable children online and*, http://eprints.lse.ac.uk/44222/. [34]

Marsh, J. (2014), "Online and offline play", in Burn, A. and C. Richards (eds.), *Children's Games in the New Media Age.*, Ashgate, Cambridge. [39]

Mascheroni, G. and K. Ólafsson (2016), "The mobile Internet: Access, use, opportunities and divides among European children", *New Media & Society*, Vol. 18/8, pp. 1657-1679, http://dx.doi.org/10.1177/1461444814567986. [14]

Ministère de l'Education nationale (2018), *Interdiction de l'utilisation du téléphone portable à l'école et au collège*, https://cache.media.eduscol.education.fr/file/Vie_des_ecoles_et_des_ets/60/8/Vademecum_inderdiction-portable-ecole-college_03092018_992608.pdf. [16]

NSW Department of Education (2018), *Student Bring Your Own Device Policy (BYOD)*, https://education.nsw.gov.au/policy-library/policies/student-bring-your-own-device-policy-byod. [12]

OECD (2019), *How's Life in the Digital Age?: Opportunities and Risks of the Digital Transformation for People's Well-being*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264311800-en. [3]

OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/1d0bc92a-en. [8]

OECD (2019), "Well-being in the digital age", *OECD Going Digital Policy Note*, OECD, Paris. [7]

OECD (2018), *Children & young people's mental health in the digital age: Shaping the future*, www.oecd.org/health/health-systems/Children-and-Young-People-Mental-Health-in-the-Digital-Age.pdf. [2]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [6]

OECD (2016), "A brave new world", in *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-8-en. [21]

OECD (2016), *Policy Brief on the Future of Work: Skills for a Digital World*, www.oecd.org/els/emp/Skills-for-a-Digital-World.pdf. [32]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [25]

Paniagua, A. and D. Istance (2018), *Teachers as Designers of Learning Environments: The Importance of Innovative Pedagogies*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264085374-en. [22]

Przybylski, A. (2019), "Digital screen time and pediatric sleep: Evidence from a preregistered cohort study", *The Journal of Pediatrics*, Vol. 205, pp. 218-223.e1, http://dx.doi.org/10.1016/j.jpeds.2018.09.054. [41]

Przybylski, A. and N. Weinstein (2017), "A large-scale test of the Goldilocks Hypothesis", *Psychological Science*, Vol. 28/2, pp. 204-215, http://dx.doi.org/10.1177/0956797616678438. [38]

RCPCH (2019), *The health impacts of screen time: A guide for clinicians and parents*, www.rcpch.ac.uk/sites/default/files/2018-12/rcpch_screen_time_guide_-_final.pdf. [48]

Scharkow, M. (2016), "The accuracy of self-reported Internet use—A validation study using client log data", *Communication Methods and Measures*, Vol. 10/1, pp. 13-27, http://dx.doi.org/10.1080/19312458.2015.1118446. [42]

Schoffstall, C. and R. Cohen (2011), "Cyber aggression: The relation between online offenders and offline social competence", *Social Development*, Vol. 20/3, pp. 587-604, http://dx.doi.org/10.1111/j.1467-9507.2011.00609.x. [33]

Selwyn, N. et al. (2017), "Left to their own devices: The everyday realities of one-to-one classrooms", *Oxford Review of Education*, Vol. 43/3, pp. 289-310, http://dx.doi.org/10.1080/03054985.2017.1305047. [10]

Uncapher, M. et al. (2017), "Media multitasking and cognitive, psychological, neural, and learning differences", *Pediatrics*, Vol. 140/Supplement 2, pp. S62-S66, http://dx.doi.org/10.1542/PEDS.2016-1758D. [47]

Valtonen, T. et al. (2015), "Developing a TPACK measurement instrument for 21st century pre-service teachers", *Seminar.net International Journal of Media, Technology & Lifelong Learning*, Vol. 11/2, https://journals.hioa.no/index.php/seminar/article/view/2353. [27]

Van Deursen, A. and E. Helsper (2018), "Collateral benefits of Internet use: Explaining the diverse outcomes of engaging with the Internet", *New Media & Society*, Vol. 20/7, pp. 2333-2351, http://dx.doi.org/10.1177/1461444817715282. [5]

Van Deursen, A., E. Helsper and R. Eynon (2016), "Development and validation of the Internet Skills Scale (ISS)", *Information, Communication & Society*, Vol. 19/6, pp. 804-823, http://dx.doi.org/10.1080/1369118X.2015.1078834. [29]

Van Deursen, A. et al. (2017), "The compoundness and sequentiality of digital inequality", *International Journal of Communication*, Vol. 11, pp. 452-473, http://eprints.lse.ac.uk/68921/1/Helsper_Compoundness%20and%20sequentiality.pdf. [30]

Van Deursen, A. and J. Van Dijk (2015), "Toward a multifaceted model of Internet access for understanding digital divides: An empirical investigation", *The Information Society*, Vol. 31/5, pp. 379-391, http://dx.doi.org/10.1080/01972243.2015.1069770. [4]

Van Dijk, J. (2017), "Digital divide: Impact of access", in *The International Encyclopedia of Media Effects*, John Wiley & Sons, Inc., http://dx.doi.org/10.1002/9781118783764.wbieme0043. [17]

Voogt, J. et al. (2013), "Technological pedagogical content knowledge - A review of the literature", *Journal of Computer Assisted Learning*, Vol. 29/2, pp. 109-121, http://dx.doi.org/10.1111/j.1365-2729.2012.00487.x. [20]

Chapter 12. Empowering an active and ethical (digital) generation

Empowering an active and ethical (digital) generation is a key policy goal for education ministries across the OECD. This chapter explores the subject of digital citizenship in all of its complexity, including the competencies to actively, responsibly and positively engage in online and offline communities. When online, even the most skilled digital citizens are likely to encounter cyber risks such as cyberbullying, sexting and revenge porn, as well as threats to their security and privacy. As well as victims, children can be the perpetrators themselves of these online misdemeanours. The anonymity and invisibility that the Internet provides can prompt children to act differently online than they might offline. This underscores the need for education systems to promote ethical online behaviour. This chapter explores how countries deal with digital risks through policies aimed at protection and promoting resilience, and highlights how they encourage active, ethical and empowered use of digital tools.

Developing digital citizenship

In education systems around the world, an increasing emphasis has been placed on digital citizenship. Interest in academic and policy spheres has resulted in a number of different definitions, but in a broad sense digital citizenship can be conceptualised as norms of behaviour regarding the use of digital technologies (Ribble, Bailey and Ross, 2004[1]). It requires both educational and technological competence, as well as access to technology (Mossberger, Tolbert and McNeal, 2008[2]).

In addition, digital citizens possess the competences to actively, responsibly and positively engage in online and offline communities (Council of Europe, 2019[3]). Some scholars argue for inclusion of online civic engagement in the digital literacy definition (Jones and Mitchell, 2016[4]), alongside respectful and tolerant behaviour towards others (UNICEF, 2017[5]).

In the 21st Century Children Policy Questionnaire, 13 systems out of the 24 that responded to this section identified developing digital citizenship as a pressing challenge in their context (see Chapter 2). This online challenge was often mentioned as having offline implications – responses highlighted that digital citizenship can contribute positively to personal development and to society as a whole, and that this can be developed in tandem with skills/knowledge pertaining to moral and civic education more generally.

The main themes that emerged from this section of the Policy Questionnaire were:

- the need to be responsible and respectful online
- the importance of offline implications (i.e. negative or maladaptive behaviours in online spaces can affect offline behaviour patterns as well)
- safety concerns – recognising harmful/threatening behaviour, exposure to non-ethical Internet usage
- media literacy.

This chapter looks at policies and practices to strengthen and build digital citizenship, as well as some of the risks and conduct issues that arise with Internet use. These include cyberbullying, revenge porn and sexting, and security and protection of data. The chapter ends with a look at building resilience and the ethical dimension of the digital world.

Policies and practices for building digital citizenship

Digital citizenship encompasses different facets. Firstly, it requires competent and positive engagement with digital technologies, thereby allowing children to create content, socialise, use digital tools to play, communicate and learn, and to work and share. It also requires active and responsible participation, the continuous defending of human dignity and also entails lifelong learning in formal, non-formal and informal contexts (Council of Europe, 2019[3]).

A set of essential digital skills are required in order to access digital resources and platforms, as well as an understanding of how to apply critical thinking in digital spaces and being able to interpret, understand and express oneself through digital means. Countries use curricular reform, development of independent bodies and teacher training programmes to develop and strengthen the digital citizenship of their students. Table 12.1 below outlines some of the approaches countries take to build digital citizenship.

Table 12.1. Targeting digital citizenship

Approaches	Details	Examples
Curriculum	Incorporation of digital and media literacy in the curriculum, either as an independent unit or class, incorporated into existing classes (i.e. language, mathematics, etc.) or a combination of both.	Media and information education in **France** (2016); Teaching of ICT and informatics in the **Greek** curriculum; Media literacy and internet security included in content areas across curriculum in **Latvia** (2020); Values and principles established in the core curriculum in **Norway**, with new subject specific curriculum in 2020
Teacher training	Teachers in many contexts are trained in digital literacy, and how to foster digital literacy and citizenship in their students. Training is often supported or offered by different groups, through multi-group partnerships.	Media coach training for teachers and educators in the **Flemish Community of Belgium** involving nine training sessions, an online course, and an "internship project" where participants conduct a project in their working environment
Independent bodies, online platforms and information campaigns	Some systems have established groups or bodies in that target children's safe and responsible use of digital media. Campaigns tend to target teachers and parents, providing information or online resources to enhance digital skills, online knowledge and digital citizenship. These can involve partnerships.	Media Council for Children and Young People in **Denmark** informs and advises on children's use of digital media (e.g. provides movie ratings, informational articles for parents and educators); The *Jeunes et Medias* platform established in **Switzerland** with information on topics ranging from "fake news" to "happy slapping" and safety and data protection; "Superheroes on the Internet" in **Latvia**
Partnerships	Some partnerships are established to disseminate or develop informational tools or resources, while others are developed between interest groups and education systems to share knowledge and best practices, or help with implementation of digital citizenship programmes.	"Superheroes on the Internet" partnership between State Police and Net-Safe **Latvia** is a social campaign for media literacy and online child safety; Media coach training in the **Flemish Community of Belgium** is implemented by *Mediawijs* in collaboration with other groups, including funding from The Ministries for Media and for Education and Training as well as the European Commission

Source: 21st Century Children Policy Questionnaire

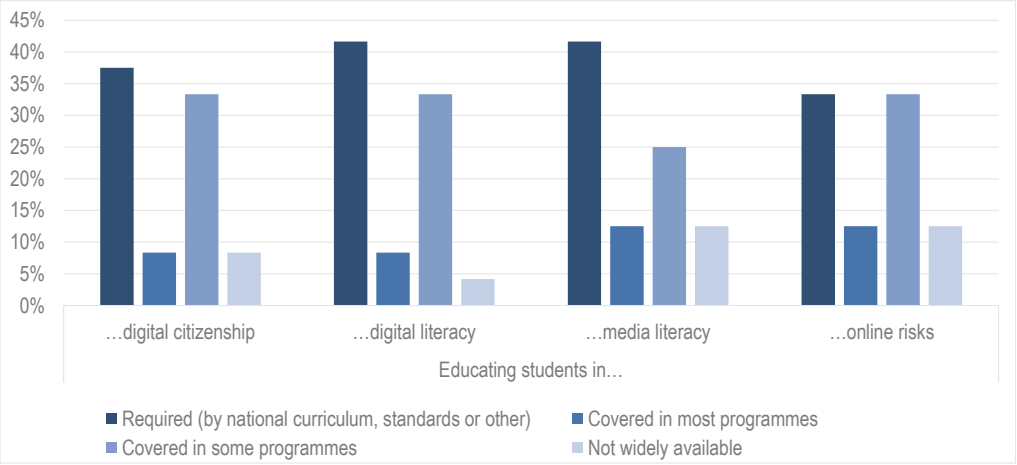
A number of education systems have embedded the teaching of digital skills (see Chapter 11), as well as information and media literacy programmes in their strategies to target digital citizenship. These approaches either involve development of a new curriculum, or integration of digital media and skills training into the existing curriculum either as an independent unit of study or through already existing courses, or a mix of both approaches. Some systems address digital citizenship education more explicitly, such as in Saskatchewan (Canada) with *Digital Citizenship Education in Saskatchewan Schools,* which spans kindergarten to Grade 12 (the last year of high school).

Focus on teaching

Approaches targeting digital citizenship are most effective if they include a component that works to build the digital skills of teachers themselves (Choi, Cristol and Gimbert, 2018[7]). However, explicit training in many of these areas is not always widely available to teachers, as shown in Figure 12.1.

While over half of the 24 systems that responded to this question in the Policy Questionnaire reported that educating students in digital citizenship and digital literacy was either required or widely available, an almost equal number reported that these topics were only covered in some programmes or not widely available. Even more strikingly, despite the policy attention paid to cyber risks, educating students in online risks was the least commonly required element included in initial and continuing professional development of teachers. These findings align with the results from the TALIS survey, in which teachers have consistently reported a high need for professional development in the use of ICT for teaching over the last 10 years (OECD, 2019[8]).

Figure 12.1. Digital skills in teacher education (initial and continuous)



Note: Responses indicate the proportion of systems that confirmed the topics were covered in existing teacher education in their systems. 24 countries and systems responded to this question.
Source: 21st Century Children Policy Questionnaire

The importance of multi-stakeholder involvement in building digital citizenship

The most effective strategies to promote digital citizenship and are those that involve a multi-stakeholder, multi-sectoral approach, including engagement from parents and children themselves (Byrne et al., 2016[9]), see also Chapter 13).

However, empowering parents to guide their children online requires them to have the necessary digital skills to do this effectively. This is challenging on two levels. First, research has demonstrated that on average, parents tend to have higher digital literacy skills than their children until they reach around 12 years of age. After a short period of similar skill level, on average children have surpassed their parents by the age of 15. This systematically results in parents not necessarily being able to appropriately guide their older children in their online experiences (Byrne et al., 2016[9]).

Second, not all children are able to turn to their parents. Children from disadvantaged homes are more likely to have parents with lower digital skills, and those parents are less likely to be involved in their schooling. Conflicts with work schedules, childcare needs, transportation problems, lack of familiarity with the institution and not speaking the same language as the teacher are just some of the participation barriers faced by parents (OECD, 2017[10]). This makes the involvement of schools and the broader community even more important for building digital citizenship and digital skills more generally.

One interesting example of an initiative involving both the broader community and technology experts comes from Google. 'Creators for Change' is a global programme consisting of fifty ambassadors with the responsibility to reach adolescents aged 13-15 years old and educate them about digital citizenship. Google also seeks to reach children coming from disadvantaged backgrounds by creating a curriculum similar to the 'Creators for Change' programme as well as by partnering with other businesses and organisations that seek to enhance the digital skills of disadvantaged youth. Recognising that poor digital literacy skills of parents can also have a negative effect on child digital literacy, the programme also pays particular attention to parental engagement.

Active and empowered use comes with risks

Some of the key components of digital citizenship include active, positive and responsible online engagement. However, with active online use comes a number of cyber risks (see Chapters 2 and 10), and some research suggests that higher information literacy and digital skill, coupled with high usage, makes children more likely to encounter online risks (Livingstone and Helsper, 2010[11]; Park, Na and Kim, 2014[12]). These risks can stand as barriers to active, effective and engaged online participation for many children, and they are also sources of considerable worry among parents and policy makers alike. The following sections highlight selected risks and the policy responses education systems use to overcome these challenges.

Cyberbullying

Cyberbullying has been defined as the aggressive targeting of a victim through digital technologies by peers (Levy et al., 2012[13]), although this definition is not always agreed upon. While it shares many similarities with traditional face-to-face bullying, the potential anonymity of online spaces, as well as the potential to reach victims despite lack of physical proximity, are important differences from traditional bullying (Kowalski et al., 2014[14]; Livingstone, Stoilova and Kelly, 2016[15]). Levels of digital literacy can affect both perpetrators and victims. For example, a greater level of digital literacy for a cyberbully may help create the power imbalance which is inherent in many forms of bullying (Görzig and Machackova, 2015[16]).

Although high on policy agendas, it is not that clear that rates of cyberbullying are increasing, despite perceptions of rising risk of harm (Livingstone, Stoilova and Kelly, 2016[15]). The latest UNESCO report on bullying around the world (including cyberbullying) suggests that levels of bullying are decreasing (UNESCO, 2019[17]). Certainly the rates of cyberbullying are lower than many people believe – on average across countries in 2014, about 12% of children reported that they had been cyberbullied (Livingstone et al., 2014[18]). However, up-to-date and comparable data in this field is currently lacking.

It is important to note that bullying and cyberbullying are understood and defined differently in different countries. In some, emphasis is placed on harassment, social exclusion or social status, while in others it might also include incidents that happen within the school context (Livingstone, Stoilova and Kelly, 2016[15]). The Digital Child Protection Strategy of Hungary, for example, takes a very broad definition of cyberbullying, including behaviours such as denigration, exclusion, sexting, cyberstalking, "outing" (i.e. unauthorised sharing of secrets or personal information with others) and "flaming" (i.e. using furious or obscene language in online arguments, or posting offensive, often irrelevant comments about someone in a public forum).

In the 21st Century Children Policy Questionnaire, 20 systems identified cyberbullying as a challenge in their context, while 15 identified it as one of the most pressing challenges (see Chapter 2). Countries and systems reported concern about the prevalence of cyberbullying, how newsworthy it is and that it affects and is affected by factors such as gender, emotional well-being/mental health, suicide and digital citizenship more broadly.

Cyberbullying is a particularly difficult issue for education systems to address, in part due to the ubiquity of digital technology and also because it often takes place outside of school. Cyberbullying usually does not occur in isolation and is often linked to offline bullying (Waasdorp and Bradshaw, 2015[19]; Baldry, Farrington and Sorrentino, 2015[20]).

Systems can have difficulty finding effective solutions, schools might be disorganised regarding implementation of these solutions, and online victimisation can be anonymous, all of which can be obstacles in dealing with cyberbullying. Cyberbullying is also a challenge that encompasses other issues such as revenge porn and sexting.

Box 12.1. Online bullying, offline implications

Cyberbullying can have far-reaching consequences, including depression (Brunstein Klomek et al., 2007[21]; Bauman, Toomey and Walker, 2013[22]; Van Geel, Vedder and Tanilon, 2014[23]), stress (Kowalski et al., 2014[14]), anxiety and sleep disorders (Swearer and Hymel, 2015[24]). It can also affect academic performance: across OECD countries, low performers in PISA tend to report greater exposure to bullying (OECD, 2017[10]).While cyberbullying might not be occurring at "epidemic" levels, children who experienced bullying on- or offline are more likely to have suicidal thoughts or attempt suicide than those who did not have these experiences (Hinduja and Patchin, 2010[25]).

High profile cases have spurred policy development in a number of different countries. In Australia, for example, the 2018 suicide of Amy "Dolly" Everett prompted the Council of Australian Governments to form a working group of senior officials across different levels and sectors of government (e.g. Education and Justice), focused on recommending actions to target (cyber) bullying. In the French Speaking Community of Belgium, a 16-year-old suicide victim, Louise, is at the centre of a cyberbullying awareness campaign. In Canada, the suicide of Rehtaeh Parsons in Nova Scotia in 2013 prompted provincial and national level inquiries. In another report from Saskatchewan an overwhelming number of youth cited cyberbullying or bullying on social media or over texting as a contributing factor to youth taking their lives (Saskatchewan Advocate for Children and Youth, 2017[26]).

However, the best way to combat cyberbullying is not always clear. Sabella, Patchin and Hinduja (2013[27]) suggest a list of "myths" regarding cyberbullying. They include:

- Everyone knows what cyberbullying is.
- Cyberbullying is occurring at epidemic levels.
- Cyberbullying causes suicide.
- Cyberbullying occurs more often now than traditional bullying.
- Like traditional bullying, cyberbullying is a rite of passage.
- Cyberbullies are outcasts or just mean kids.
- To stop cyberbullying, just turn off your computer or cell phone.

The ubiquity of technology and the opportunities it offers make it both unrealistic and counter-productive to suggest turning off or banning devices. Therefore, approaches should focus on enhancing digital citizenship, dealing with aggression, traditional bullying and violence in the school, and coordinating mental health and suicide prevention programmes to help support all students, especially the most vulnerable.

Policies and practices for cyberbullying

There are a number of anti-bullying policies and initiatives in place across the countries and systems that responded to the Policy Questionnaire. Some of these initiatives specifically target cyberbullying, others include it as a component of a more general

anti-bullying framework, whereas still others refer more broadly to bullying as an umbrella term.

Information campaigns and teacher training are important steps in tackling cyberbullying for children. When adults understand online safety and are capable users of digital technologies, they also tend to be more successful in guiding children's digital use. Therefore, a crucial step in ensuring online safety for children is to disseminate information and train teachers and parents on online safety, and give advice on how to help children manage online risks (Livingstone, Davidson and Bryce, 2017[28]). Furthermore, adopting whole-school approaches in resolving online issues can help members of the broader educational community protect and support students online, and coherent policies addressing cyberbullying and traditional bullying are essential (Hooft Graafland, 2018[29]).

One of the biggest challenges is measuring the effectiveness of cyberbullying campaigns or policies. Firstly, without a clear, agreed upon definition, it is difficult to understand what to measure and how to do so, as methodologies also tend to differ across surveys (Volk, Veenstra and Espelage, 2017[30]). This hampers the comparability of research findings in the field. In addition, on a national or subnational level, many systems have limited available data (see Chapter 10). Those that do collect data on cyberbullying, such as the National Statistics Bureau in Netherlands, do not necessarily look at the effectiveness of specific measures. Some systems, such as Ireland have a more formalised evaluation process whereby the Department of Education and Skills inspectorate checks school compliance to the action plan, however many programmes lack effective evaluation measures.

Sexting and revenge porn

Sexting involves the "creating, sharing and forwarding of sexually suggestive nude or nearly nude images" by individuals (Lenhart, 2009[31]). Revenge porn refers to posting nude images of non-consenting individuals online (Stroud, 2014[32]).

16 countries and systems who responded to the Policy Questionnaire identified sexting as a challenge in their context and three identified this as a pressing challenge (Latvia, Netherlands and Portugal). Sharing sexually explicit images or videos can be illegal, especially if the subject is underage. It can also lead to sextortion (i.e. threatening to publicly publish images if the subject does not pay a bribe, see Chapter 10).

Sexting is not uncommon, despite the fact that adolescents report understanding that their sexually explicit photos can be used later for coercion or blackmail (Van Ouytsel et al., 2016[33]). However, it is difficult to accurately estimate its prevalence: studies from the United States using nationally representative samples of teens vary in estimates from 2.5% to 24%. Indeed, across studies, sexting can be measured in very different ways, making any kind of cross-study or national comparison difficult (Kosenko, Luurs and Binder, 2017[34]). Some research suggests girls are more likely to feel pressured into sending sexts and tend to report more negative sexting experiences than boys (Burén and Lunde, 2018[35]), and this might be done out of fear that they could lose their romantic partner (Van Ouytsel et al., 2016[33]). On the contrary, other results suggest that girls are less inclined to engage in sexting (Walrave et al., 2015[36]).

Table 12.2. Targeting cyberbullying: Country policies and practices

Target	Examples
Information campaigns/resources	**Australia:** The Student Well-being Hub is a website that has information for students, parents and educators on topics including bullying. **Belgium (French Speaking Community)**: prevention and information campaigns are organised in partnership with the police, NGOs and child-focused associations. Information is targeted at students (i.e. the triptych "Harcèlement à l'école : à qui en parler ?)" and there is a brochure for parents about what they can do if their children are bullied at school. Another campaign, at the initiative of the Federal Police, targets cyberbullying through giving the example of Louise, a 16-year-old who committed suicide and was a victim of severe cyberbullying. **France:** "Non au Harcèlement" is an initiative with an information campaign and website fighting against all forms of bullying, with special emphasis on cyberbullying. There is also a national day in France dedicated to awareness of bullying. **Greece:** In Greece, there is a thematic week dedicated to bullying and cyberbullying awareness, which includes the implementation of awareness-raising activities in schools. This has been incorporated into the Internet Safety Plan. **Ireland:** Webwise is the Irish Internet Safety Awareness Centre (co-funded by the Department of Education and Skills and the EU's Connecting Europe Facility). It develops and disseminates resources to help teachers integrate Internet safety into their teaching, and provides information to parents. The Webwise Youth Advisory Panel helped develop youth-oriented awareness resources and campaigns on topics like cyberbullying.
Child-centred support outside of the school, reporting mechanisms	**Australia:** The office of the eSafety Commissioner (an independent office created by the Enhancing Online Safety for Children Act) operates a reporting scheme to deal with serious cyberbullying, and also for illegal online content and image-based abuse. **Belgium (French Speaking Community):** Separate toll-free numbers exist for both teachers and parents who are dealing their students/children experiencing bullying or violence. The line for parents can also offer support on procedures regarding psychological, social, legal or administrative processes. **France**: *Net Ecoute* is a free, anonymous and confidential phone number children can call to talk about cyberbullying and harassment. It gets about 5 000 calls per year, and can direct calls to other numbers such as emergency services. **Latvia**: Children can phone a helpline to get support for cyberbullying, as well as topics such as loneliness at school and abuse in the home.
National/subnational policy approach	**Australia:** The Australian School Wellbeing Framework supports schools to build inclusive and positive environments, through promoting visible leadership, family partnerships and positive behaviours. **Saskatchewan (Canada)**: The Saskatchewan Action Plan to Address Bullying and Cyberbullying was released in November 2013. Following this release, Digital Citizenship Education in Saskatchewan Schools was created, as the promotion of this competence is seen as a key area in addressing cyberbullying. **Ireland:** The 2013 Action Plan on Bullying includes cyberbullying as an explicit form of bullying. Anti-Bullying Procedures for Primary and Post-Primary Schools were subsequently developed, and are mandatory procedures for all schools; they give direction and guidance to schools in preventing and tackling school-based bullying. **Netherlands:** Schools are required by law to have a safety plan, which indicates at least one person to whom parents and children can report cases of (cyber)bullying, and coordinates the policies at the school. Education councils can help schools develop their policies. **Scotland (United Kingdom):** Respect for All is Scotland's national approach to anti-bullying for children and young people. It is expected that local authorities and organisations develop their own anti-bullying policies based on Respect for All. It also provides e-safety self-review tool, and training opportunities to help develop and implement local policies. It operates under the notion that online and face-to-face bullying should be treated the same.
Teacher support	**Belgium (French Speaking Community):** In 2015, the *Technologies de l"Information et de la Communication pour l'Enseignement* (TICE) project drafted a file on "Conquering Social Networks" containing tools for teachers to help address online behaviours and attitudes including cyberbullying. It offers teachers examples of good practice, as well as resources and tools to use in class. The Higher Council for Media Education also produced pedagogical dossiers for teachers on how to prevent cyberbullying through promoting media literacy. **Russian Federation:** One of the strategies to target cyberbullying is to prepare teachers, as well as psychologists, to identify cases of cyberbullying.

Source: 21st Century Children Policy Questionnaire

As highlighted in Chapter 10, sexism and gender stereotyping appear to play a significant role in the 'culture of sharing'. There is also potentially a 'moral blind spot' around sexting compared to other behaviours. In one Canadian study, a large number of young people used moral disengagement mechanisms to justify non-consensual sharing of intimate images. These mechanisms included *i)* justifying an action (e.g. 'sharing a sext of a girl raises the awareness of other girls'), *ii)* shifting responsibility (e.g. 'one does not have the power to stop the sharing of sexts'), *iii)* blaming the victim (e.g. 'sharing of a sext is the fault of the girl who originally sent it') and *iv)* denying the harm (e.g. 'sharing sexts is so common, nobody cares about it') (Johnson et al., 2018, pp. 12-13[37])..

Only 12 countries identified revenge porn as a challenge in their national context, with one (Netherlands) identifying it as one of their most pressing challenges. Many countries in recent years have taken note of revenge porn and have been working hard to legislate against it and to protect victims. From 2013-2016, the number of OECD and BRICS countries that enacted national laws on revenge porn increased from 1 to 16 (OECD, 2016[38]), and more have done so since then.

Policies and practices addressing sexting and revenge porn

Addressing sexting and revenge porn is multifaceted, in part due to legal but also emotional ramifications. Launching legal investigations or police interventions can present additional challenges for schools, especially if the violation took place outside of school. Some approaches countries have taken are summarised in Table 12.3. While there is little research on the ramifications on emotional well-being of revenge porn, early research in the field suggests revenge porn survivors are prone to facing a number of mental health concerns such as anxiety, depression and suicidal thoughts (Bates, 2016[39]). This highlights the need for robust policy actions to protect individuals, especially minors, from revenge porn.

Table 12.3. Initiatives addressing sexting and revenge porn

Initiative type	Details
Legal avenues	**Latvia:** young people face criminal liability when sharing explicit pictures of underage peers, according to child pornography legislation. This covers sexting and revenge porn. **Canada, Ireland, Japan, New Zealand, Spain, Sweden, the United Kingdom and 24 states in the United States:** these systems all have specific laws to address revenge porn. In the United Kingdom, Scotland has no law but launched a consultation on the matter (OECD, 2016).
Teacher training	**Portugal:** In collaboration with security forces and the sexuality team of the National Strategy for Citizenship Education, the Ministry of Education provides teacher training as one pillar of a programme promoting awareness of sexting.
Informational resources and campaigns	**Portugal**: dissemination and promotion of information about sexting through debates and creation of educational materials is another pillar of Portugal's initiative to address sexting. **Latvia**: school visits are organised to present informational resources and campaign materials informing students, parents and teachers of the dangers of sexting. Online tools and resources are also available, as well as online and phone helplines

Source: 21st Century Children Policy Questionnaire and OECD (2016[38])

Security and privacy

By virtue of being online, people leave trails of personal data and sensitive and confidential data can be stored on servers around the world. With the rise of data breaches over the past fifteen years (OECD, 2019[40]) cyber-security is at the forefront of many online discussions. Phishing for personal information, surveillance, industrial-scale data processing and

behavioural advertising based on personal information online are all risks children face when they go online.

One of the biggest challenges in working to secure and protect children's data is whether or not they understand the consequences for their own privacy. Unsurprisingly, their ability to do this depends on age and maturity, as well as their digital literacy skills. Recent work from Livingstone and Stoilova (2018[41]) has revealed that children aged 5-7 already have a sense of privacy rules, although they struggle to comprehend the consequences of their actions. By 8-11, privacy management is governed more by rules than internalised behaviours. By 12-17 years, children and youth are aware of privacy risks and they assess opportunities and risks, but tend to focus on short-term benefits when making a decision.

A number of systems recognise issues of security and privacy as pressing in their national or regional contexts and countries are increasingly working to address these issues legislatively (see Chapter 10). Of the countries and systems responding to the 21st Century Children Policy Questionnaire, 17 identified online security and privacy to be a challenge in their context; five systems identified this as one of the most pressing challenges (Denmark, Flemish Community of Belgium, France, Norway and Scotland).

In some countries this is a priority due to the recent implementation of the EU General Data Protection Regulation (GDPR) initiative (see Box 12.2).

Box 12.2. GDPR

The European Union (EU) Charter of Fundamental Rights stipulates the right EU citizens have to the protection of their personal data (European Union, 2012[42]). Accordingly, in 2016 the General Data Protection Regulation (GDPR) came into force for all EU member states in order to overcome the fragmentation across countries and to clarify rights and rules in the digital age regarding personal data. All EU countries are subject to the GDPR legislation. However, a number of EU countries adopt national legislation or implement policies that go further than GDPR.

The GDPR cover all individuals within the EU and EEA as well as the export of their personal data outside of these areas. One single set of rules applies to all EU member states and EEA states, and requires consent of personal data processing unless there is an existing legal basis to do so.

The GDPR includes tenets such as the "right to erasure" (previously the "right to be forgotten"). In addition, each data subject has legal obligations to notify data breaches to supervisory authority, a right of access (i.e. citizens have rights to access personal data as well as information on how these data are being processed), and the pseudonymisation (not anonymisation) when storing personal data.

The extraterritorial applicability of the regulation means it applies to all companies processing personal data of data subjects residing in the EU or EEA, regardless of where the company is physically based. Breaching GDPR comes with a large financial cost; up to 4% of annual global turnover or EUR 20 000 (whichever is greater) is the maximum fine that can be imposed on the most serious infringements of the regulation.

Policies and practices

It is not always easy to translate security policy at the operational level in education. Some systems take a national approach to data protection, whereas others take a decentralised approach and leave policies and implementation up to the jurisdiction of regional or local authorities, sometimes even down to the level of individual schools. Table 12.4 provides an overview of country initiatives to protect student data and privacy.

Table 12.4. Initiatives addressing security, privacy and student data protection

	Examples
Safe log-ins and single sign on	**Greece:** The Greek School Network implemented a central user authentication service, with single sign on for all integrated applications and authorised services for all primary and secondary schools. It connects over 15 000 schools to the Internet. **Norway:** The Feide programme affords a safe login through a simplified system and single registration that is authenticated by home organisations. Students register for a single set of credentials that is used across all Feide-enables services, and the flow of personal information is limited. **Switzerland:** FIDES project is under development, to create a "single digital identity", similar to Norway.
Information & school-based guidelines	**Belgium (Flemish Community):** Mediawijs has a dedicated portal to data protection issues, with resources, guidelines, information and tools for schools. Security assessments are also available. **Ireland:** Brochures provide guidance on how schools can take a whole-school policy in terms of data protection, and there is a Data Protection Schools service that gives schools advice and outlines the responsibilities of data controllers. **Latvia:** the State Data Inspectorate has issued guidelines on online awareness with a specific section for privacy, including stipulations about data protection and the duties of the school (i.e. not storing excessive data, processing can only be done for specific purposes and never for commercial or political reasons). The Safer Internet Centre provides information on security and privacy, as well as carrying out surveys of parents and children regarding their ICT use and ability to avoid dangerous online situations. **Luxembourg:** the Bee Secure initiative outlines rights according to GDPR and provides a forum and instructions on how individuals can lodge complaints or take legal actions **Scotland (United Kingdom):** Child protection committees will be used to explore how child Internet safety can be coordinated through increased awareness of information and support and training
(sub)National laws/policies	**France:** In June of 2018 a French law was instituted focusing on protection of student data. The responsibilities of the *délégués à la protection des données* (DPD; data protection delegates) include respecting the legal frameworks around personal data and informing/advising responsible persons on the management of data, including heads of schools and academic directors of different educational services. **Quebec (Canada)**: protection of students' personal information is governed by the Protection of Personal Information at School policy, which sets out responsibilities of school staff, and basic principles that schools should use as a guide to implement measures that comply with local laws. **Nova Scotia (Canada):** student data are protected by the Privacy of Student Information Policy, which obliges institutions to uphold principles of privacy, good custodianship, and accountability when collecting, using and disclosing information. School boards are also required to have privacy breach protocols. **Turkey:** student data are saved and protected on servers at the Ministry of Education **United States**: federal laws protect the privacy of student educational records (FERPA).
Integrated approaches	**Hungary:** The Digital Child Protection Strategy focuses on three pillars: awareness raising and media education, protection and safety, and applying sanctions and providing help. Actors such as NGOs, businesses, the media and other government organisations are integral in ensuring awareness raising. **Scotland (United Kingdom):** Internet safety action plans are implemented by different stakeholders, but centrally monitored by government. Actors include parents and carers and third sector organisations such as Police Scotland, the National Health Service, and Education Scotland.

Source: 21st Century Children Policy Questionnaire; Hungary's Digital Child Protection Strategy

Ensuring the effective protection of student data will require data security and privacy training for people managing education information systems. This is because individual users are more likely to be the weakest links of the chain in data protection than the technical systems themselves (Jardine, 2015[43]). In addition, no matter the policy, it is important that while protecting children online, their independence and autonomy must also be respected (UNICEF, 2017[5]).

Building digital resilience

It is important to identify which children are more vulnerable to digital risks in order to help build resilience. Risk factors include (1) personality factors such as sensation-seeking, low self-esteem and psychological difficulties, (2) social factors such as the lack of parental support and peer norms, and (3) digital factors such as specific online practices, online sites and skills (Livingstone et al., 2014[18]; Anderson, Steen and Stavropoulos, 2017[44]).

At home, many parents use rules, time limits and bans on particular activities or content. These restrictive strategies are associated with fewer risks, but come at the cost of digital opportunities. Parents who are more confident in their own or their children's digital skills take a less restrictive approach. By encouraging digital activity and sharing it with children, such parents create a safer environment without hindering children's agency and learning, helping them better manage risk and learn when things go wrong (Livingstone, Davidson and Bryce, 2017[28]). This suggests that interventions targeting the skills of both parents and children can increase children's resilience and expand their opportunities.

Schools can contribute to students' risk resilience in a number of ways (OECD, 2018[45]), including training for teachers on digital risks and their implications, fostering a zero-tolerance culture to behaviours such as cyberbullying and introducing online ethics and safety learning opportunities into the curriculum, offering spaces for adult and peer mentoring so that students can discuss practical implications of digital engagement and improve their levels of empathy and self-control (Harrison-Evans and Krasodomski-Jones, 2017[46]; Hutson, Kelly and Militello, 2017[47]; Döring, 2014[48]). In addition to school level policy, there are also a number of broader initiatives that are available to help protect children and build their resilience to online risks (see Box 12.3).

Box 12.3. eSafety initiatives in Europe

The eSafety Kit is available in Austria, the French and Flemish communities of Belgium, Czech Republic, Ireland, Greece, Hungary, Netherlands, Poland, Romania and Spain. This interactive portal provides children with eSafety tips such as taking breaks and protecting posture, keeping email addresses and personal information safe, thinking before posting and ignoring cyberbullies. It shares links and phone numbers to national and international websites/hotlines and sites that publish where children can legally download things such as music. Each national eSafety kit also has a resource section for teachers and parents. For example, in the teacher space there are downloadable quizzes that can be administered to students aged 6-12 on topics such as cyberbullying and "smart surfing", as well as a quiz on chat acronyms such as "ilu" (I love U). The parent section has a guide to keeping kids safe online, and a family fun booklet filled with activities.

Better Internet for Kids (BIK) is a service platform developed and maintained by the European Schoolnet on behalf of the European Commission. Besides providing information and materials to the public, it also provides a safe and closed space for youth to meet with youth coordinators from their national Safer Internet Centre to share ideas, discuss and debate. The BIK platform provides information about hotlines to anonymously report dangerous or illegal online material (i.e. child sexual abuse material), and Safer Internet Day, which raises awareness of emerging online issues as well as contact details for national helplines.

Respecting others and netiquette

Children participate in many different online spaces, ranging from social media to forums and multiplayer games. Many children create profiles on sites such as Instagram and Facebook using their real names and photos, which is sometimes even required by the platform. However, sites such as Reddit and YouTube, and gaming sites such as Fortnite, allow users to engage with other users under the guise of avatars and usernames, thereby providing anonymity and invisibility.

Online anonymity can stimulate disinhibition, and can prompt users to say and do things online that they would not ordinarily say and do in offline settings. This can be both positive and negative: For example, children can disclose more about themselves than they would in person, which can stimulate closeness between friends (see Chapter 5). However, it can also open the door for threats to their online security or privacy. It is thus important for children to understand online norms and to learn how to maintain respect and behave ethically online, especially as some youth believe that online spaces provide them with relatively anonymous, safe spaces, free from judgment, immediate consequences or direct criticism (Runions and Bak, 2015[49]; Suler, 2004[50]).

Ethical online behaviour extends beyond action and includes reactions to others. For example, young people may perceive aggression that occurs online differently, thereby affecting their willingness to intervene in online altercations between bullies and victims (making them "cyberbystanders"). The lack of physical and verbal cues, such as body language and tone, can make it difficult to understand online intentions, making it easier for children to ignore potential aggression and avoid becoming involved. Furthermore, in comparison to the school environment, there is a lack of clearly established authority figures and rules in online spaces (Patterson, Allan and Cross, 2016[51]). This might affect how children see they can report online transgressions, and to whom. Table 12.5 sets out some of the elements involved.

Table 12.5. Factors contributing to online disinhibition

Factor	Description
Anonymity	Other Internet users cannot determine who they are; allows for separation of actions online from in-person identity, online behaviours "aren't me at all"
Invisibility	People cannot see each other; subtle signs and body language signifying indifference or disapproval are not seen, which can often inhibit what people are willing to express
Asynchronicity	Interactions are not necessarily in real time; individuals do not need to cope with immediate reactions, and can make it seem easier to "put something out there"
Perception of others (Solipsistic introjection)	Reading messages from others is experienced as a voice within one's own head, they are shaped by your expectations; "the way I see you is the real you"
Dissociation	Dissociation between online and offline selves; "online persona is not who I am in real life", and allows individuals to escape from their offline selves
Minimisation of authority	In the absence of clear distinctions of authority and status, people are more likely to misbehave or speak out, however this can also empower online users to express themselves more freely and allows for greater heterogeneity in social networks

Source: Adapted from Suler (2004[50])

While the Table above focuses mainly on negative implications, some of these disinhibiting factors can empower children by allowing them to express themselves freely, stimulating their online creativity, and can also enhance closeness between friends whether mixed-mode or virtual. The anonymity of online spaces can provide opportunities for youth in

historically marginalised groups such LGBTQ+ to explore their identity, participate in online discussion and come out digitally (Craig and McInroy, 2014[52]).

Netiquette

Netiquette, combining the net of Internet with etiquette, generally refers to acceptable online behaviour. The examples relayed throughout this chapter such as cyberbullying, and engaging in sexting or revenge porn, showcase examples of bad netiquette and can be detrimental for children's well-being and online participation.

In the literature, netiquette can be measured in different ways. For example, Park and colleagues (2014[12]) used six questions in their survey such as "It is not a crime to bully someone online because it is not in a face-to-face interaction", "It is okay to insult somebody by criticising them online because everyone has freedom of expression" and "It is okay to share sexual material or harmful online content online, including sending them through mobile phones for fun" to assess netiquette in a sample of South Korean adolescents. Kumazaki and colleagues (2011[53]) used a different scale, including items asking whether respondents thought certain behaviours online were wrong such as creating and spreading rumours, impersonating others online, sharing login information with friends and participating in online polls about fellow classmates while knowing this could hurt others. As is the case with other online phenomena, the definitions and ways of measuring netiquette are not consistent across the literature, and generally focus on maladaptive online behaviours.

An example of a positive angle is the use of social platforms to extend children's social relationships and contribute to their social and political engagement. One such example are 'flop accounts' collectively managed by youngsters that act as fora where challenging social and political topics are discussed. The shared nature of these platforms have the added benefit of allowing trusted peers to step in to defend an individual in case of, for instance, cyberbullying. These shared accounts can also be used for negative purposes, of course.

Other topics that feature frequently in the netiquette literature include "trolling", which can refer to causing disruption or triggering/exacerbating conflict online for one's own amusement (Hardaker, 2010[54]), although, as with netiquette, definitions and behaviours that fall under the trolling umbrella vary (Cook, Schaafsma and Antheunis, 2017[55]). Scholars suggest that using the Internet allows for increased opportunities for aggression, as well as the willingness or ability to override inhibition as factors explaining why some individuals are more likely to act aggressively online (Anderson and Bushman, 2002[56]). However, this is indeed not the case for many children and teens engaging in online spaces; some youth are just more susceptible to succumbing to the impact of disinhibition online and to engaging in aggressive or immoral behaviour, which is a relatively understudied phenomenon (Kurek, Jose and Stuart, 2019[57]).

Dealing with challenges to ethical online use such as cyberbullying not only requires fostering netiquette but also developing social and emotional skills. Across the literature, bullying is consistently reported as one of the biggest predictors of cyberbullying (Chen, Ho and Lwin, 2017[58]). More broadly, propensity to misbehave online (i.e. engaging in deviant behaviour such as illegal downloading or accessing pornography) is strongly correlated with misbehaving offline (Selwyn, 2008[59]; Kim and Kim, 2015[60]). Therefore, addressing challenges children face in digital spheres involves online scrutiny and a host of other measures. For example, using a whole school approach that encompasses traditional anti-bullying approaches, development of social and emotional skills such as

tolerance, empathy, co-operation and emotional control, can be effective measures in targeting cyberbullying. Fostering empathy through school-based programmes may be an effective measure in reducing aggression in adolescents (Castillo et al., 2013[61]), which is related to cyberbullying (Park, Na and Kim, 2014[12]).

Teachers can encourage students to critically but respectfully engage in informed discussions while building their digital confidence, motivation and skills. Schools can emphasise the production and sharing of digital content (Kahne, Hodgin and Eidman-Aadahl, 2016[62]), as well as discussions on digital behaviour and its ethical implications (Harrison-Evans and Krasodomski-Jones, 2017[46]). Parents have an important role to play too; support for families in ensuring they monitor adolescents' behaviour and set clear rules to establish appropriate behaviour can be important in bullying prevention (Hemphill and Heerde, 2014[63]) (Wang and Xing, 2018[64]).

One key issue relates to privacy. Social networking sites are considered "private spaces", and the right to privacy must be balanced with discussions about what is appropriate to share and not. The permanent nature of content in the virtual world – and the fact that everything that is posted is likely to persist long after graduation – changes the definition of what is considered "appropriate content". Using social media profiles specifically created for school activity might be one way to overcome such concerns. Discussions, guidance and examples of how this has played out in work searches, political campaigns and other public spheres are also helpful.

In sum

With the rise of technology use at home and in the classroom, developing digital citizenship has been a priority in countries around the world. Ensuring children are active, engaged and respectful online is essential to fostering digital skill development and inclusion of even the most marginalised of children.

The reality of being online is that children, despite their digital skill level, will be exposed to risks. Some of these include cyberbullying, sexting, revenge porn, and security and privacy breeches. By encouraging children to be resilient and to engage in ethical online behaviours, they will be more able to overcome online challenges, and can avoid becoming perpetrators or idle bystanders themselves. For governments and ministries, this will involve implementing policies to give children (and parents) the tools and knowledge to protect themselves online, establishing and disseminating clear information concerning illegal online and offline activity, and will also require the implementation of strong social and emotional learning programmes. Strong development of these skills will help children in their online and offline resilience, and may play a role in reducing online aggression and transgressions.

References

Anderson, C. and B. Bushman (2002), "Human aggression", *Annual Review of Psychology*, Vol. 53/1, pp. 27-51, http://dx.doi.org/10.1146/annurev.psych.53.100901.135231. [56]

Anderson, E., E. Steen and V. Stavropoulos (2017), "Internet use and Problematic Internet Use: A systematic review of longitudinal research trends in adolescence and emergent adulthood", *International Journal of Adolescence and Youth*, Vol. 22/4, pp. 430-454, http://dx.doi.org/10.1080/02673843.2016.1227716. [44]

Baldry, A., D. Farrington and A. Sorrentino (2015), "'Am I at risk of cyberbullying'? A narrative review and conceptual framework for research on risk of cyberbullying and cybervictimization: The risk and needs assessment approach", *Aggression and Violent Behavior*, Vol. 23, pp. 36-51, http://dx.doi.org/10.1016/J.AVB.2015.05.014. [20]

Bates, S. (2016), "Revenge porn and mental health", *Feminist Criminology*, Vol. 12/1, pp. 22-42, http://dx.doi.org/10.1177/1557085116654565. [39]

Bauman, S., R. Toomey and J. Walker (2013), "Associations among bullying, cyberbullying, and suicide in high school students", *Journal of Adolescence*, Vol. 36/2, pp. 341-350, http://dx.doi.org/10.1016/J.ADOLESCENCE.2012.12.001. [22]

Brunstein Klomek, A. et al. (2007), "Bullying, depression, and suicidality in adolescents", *Journal of the American Academy of Child & Adolescent Psychiatry*, Vol. 46/1, pp. 40-49, http://dx.doi.org/10.1097/01.CHI.0000242237.84925.18. [21]

Burén, J. and C. Lunde (2018), "Sexting among adolescents: A nuanced and gendered online challenge for young people", *Computers in Human Behavior*, Vol. 85, pp. 210-217, http://dx.doi.org/10.1016/J.CHB.2018.02.003. [35]

Byrne, J. et al. (2016), *Global Kids Online Research Synthesis, 2015-2016*. [9]

Castillo, R. et al. (2013), "Effects of an emotional intelligence intervention on aggression and empathy among adolescents", *Journal of Adolescence*, Vol. 36/5, pp. 883-892, http://dx.doi.org/10.1016/j.adolescence.2013.07.001. [61]

Chen, L., S. Ho and M. Lwin (2017), "A meta-analysis of factors predicting cyberbullying perpetration and victimization: From the social cognitive and media effects approach", *New Media & Society*, Vol. 19/8, pp. 1194-1213, http://dx.doi.org/10.1177/1461444816634037. [58]

Choi, M., D. Cristol and B. Gimbert (2018), "Teachers as digital citizens: The influence of individual backgrounds, internet use and psychological characteristics on teachers' levels of digital citizenship", *Computers & Education*, Vol. 121, pp. 143-161, http://dx.doi.org/10.1016/J.COMPEDU.2018.03.005. [7]

Cook, C., J. Schaafsma and M. Antheunis (2017), "Under the bridge: An in-depth examination of online trolling in the gaming context", *New Media & Society*, Vol. 20/9, pp. 3323-3340, http://dx.doi.org/10.1177/1461444817748578. [55]

Council of Europe (2019), *Digital Citizenship Education Handbook*, Council of Europe Publishing, Strasbourg. [3]

Craig, S. and L. McInroy (2014), "You can form a part of yourself online: The influence of new media on identity development and coming out for LGBTQ youth", *Journal of Gay & Lesbian Mental Health*, Vol. 18/1, pp. 95-109, http://dx.doi.org/10.1080/19359705.2013.777007. [52]

Döring, N. (2014), "Consensual sexting among adolescents: Risk prevention through abstinence education or safer sexting?", *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, Vol. 8/1, http://dx.doi.org/10.5817/cp2014-1-9. [48]

European Union (2012), *Charter of Fundamental Rights of the European Union*, Official Journal of the European Union, www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT. [42]

Görzig, A. and H. Machackova (2015), "Cyberbullying from a socio-ecological perspective: A contemporary synthesis of findings from EU Kids Online", No. 36, MEDIA@LSE Working Paper Series, www.lse.ac.uk/collections/media@lse/mediaWorkingPapers/. [16]

Hardaker, C. (2010), "Trolling in asynchronous computer-mediated communication: From user discussions to academic definitions", *Journal of Politeness Research. Language, Behaviour, Culture*, Vol. 6/2, pp. 215-242, http://dx.doi.org/10.1515/jplr.2010.011. [54]

Harrison-Evans, P. and A. Krasodomski-Jones (2017), *The Moral Web: Youth Character, Ethics and Behaviour*, Demos, London, https://demos.co.uk/project/the-moral-web/. [46]

Hemphill, S. and J. Heerde (2014), "Adolescent predictors of young adult cyberbullying perpetration and victimization among Australian youth", *Journal of Adolescent Health*, Vol. 55/4, pp. 580-587, http://dx.doi.org/10.1016/j.jadohealth.2014.04.014. [63]

Hinduja, S. and J. Patchin (2010), "Bullying, cyberbullying, and suicide", *Archives of Suicide Research*, Vol. 14/3, pp. 206-221, http://dx.doi.org/10.1080/13811118.2010.494133. [25]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [29]

Hutson, E., S. Kelly and L. Militello (2017), "Systematic review of cyberbullying interventions for youth and parents with implications for evidence-based practice", *Worldviews on Evidence-Based Nursing*, Vol. 15/1, pp. 72-79, http://dx.doi.org/10.1111/wvn.12257. [47]

Jardine, E. (2015), *Global Cyberspace is Safer Than You Think: Real Trends in Cybercrime*, Global Commission on Internet Governance, www.cigionline.org/sites/default/files/no16_web_0.pdf. [43]

Johnson, M. et al. (2018), *Non-Consensual Sharing of Sexts: Behaviours and Attitudes of Canadian Youth*, http://mediasmarts.ca/sites/mediasmarts/files/publication-report/full/sharing-of-sexts.pdf. [37]

Jones, L. and K. Mitchell (2016), "Defining and measuring youth digital citizenship", *New Media & Society*, Vol. 18/9, pp. 2063-2079, http://dx.doi.org/10.1177/1461444815577797. [4]

Kahne, J., E. Hodgin and E. Eidman-Aadahl (2016), "Redesigning civic education for the digital age: Participatory politics and the pursuit of democratic engagement", *Theory & Research in Social Education*, Vol. 44/1, pp. 1-35, http://dx.doi.org/10.1080/00933104.2015.1132646. [62]

Kim, J. and J. Kim (2015), "International note: Teen users' problematic online behavior: Using panel data from South Korea", *Journal of Adolescence*, Vol. 40, pp. 48-53, http://dx.doi.org/10.1016/j.adolescence.2015.01.001. [60]

Kosenko, K., G. Luurs and A. Binder (2017), "Sexting and sexual behavior, 2011-2015: A critical review and meta-analysis of a growing literature", *Journal of Computer-Mediated Communication*, Vol. 22/3, pp. 141-160, http://dx.doi.org/10.1111/jcc4.12187. [34]

Kowalski, R. et al. (2014), "Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth", *Psychological Bulletin*, Vol. 140/4, pp. 1073-1137, http://dx.doi.org/10.1037/a0035618. [14]

Kumazaki, A. et al. (2011), "The effects of Netiquette and ICT skills on school-bullying and cyber-bullying: The two-wave panel study of Japanese elementary, secondary, and high school students", *Procedia - Social and Behavioral Sciences*, Vol. 29, pp. 735-741, http://dx.doi.org/10.1016/J.SBSPRO.2011.11.299. [53]

Kurek, A., P. Jose and J. Stuart (2019), "'I did it for the LULZ': How the dark personality predicts online disinhibition and aggressive online behavior in adolescence", *Computers in Human Behavior*, Vol. 98, pp. 31-40, http://dx.doi.org/10.1016/J.CHB.2019.03.027. [57]

Lenhart, A. (2009), *Teens and Sexting: How and Why Minor Teens Are Sending Sexually Suggestive Nude or Nearly Nude Images via Text Messaging*, Pew Research Center, Washington, D.C., www.ncdsv.org/images/pewinternet_teensandsexting_12-2009.pdf. [31]

Levy, N. et al. (2012), "Bullying in a networked era: A literature review", *SSRN Electronic Journal*, http://dx.doi.org/10.2139/ssrn.2146877. [13]

Livingstone, S., J. Davidson and J. Bryce (2017), *Children's Online Activities, Risks and Safety: A Literature Review by The UKCCIS Evidence Group*, UK Council for Children Internet Safety, London, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/650933/Literature_Review_Final_October_2017.pdf. [28]

Livingstone, S. and E. Helsper (2010), "Balancing opportunities and risks in teenagers' use of the internet: The role of online skills and internet self-efficacy", *New Media & Society*, Vol. 12/2, pp. 309-329, http://dx.doi.org/10.1177/1461444809342697. [11]

Livingstone, S. et al. (2014), *Children's Online Risks and Opportunities: Comparative Findings From EU Kids Online and Net Children Go Mobile*, LSE, London, http://eprints.lse.ac.uk/60513/. [18]

Livingstone, S. and M. Stoilova (2018), *Children's data and privacy online: Exploring the evidence*, www.lse.ac.uk/media-and-communications/assets/documents/research/projects/childrens-privacy-online/Children's-data-and-privacy-online-exploring-the-evidence.pdf. [41]

Livingstone, S., M. Stoilova and A. Kelly (2016), "Cyberbullying: Incidence, trends and consequences", in *Ending the Torment: Tackling Bullying from the Schoolyard to Cyberspace*, United Nations Office of the Special Representative of the Secretary-General on Violence against Children, New York, USA, http://eprints.lse.ac.uk/68079/. [15]

Mossberger, K., C. Tolbert and R. McNeal (2008), *Digital Citizenship*, The MIT Press, Cambridge, MA. [2]

OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/1d0bc92a-en. [8]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [40]

OECD (2018), "A brave new world: Technology and education", *Trends Shaping Education Spotlights*, No. 15, OECD Publishing, Paris, https://dx.doi.org/10.1787/9b181d3c-en. [45]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [10]

OECD (2016), *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-en. [38]

Paraskeva, F., H. Bouta and A. Papagianni (2008), "Individual characteristics and computer self-efficacy in secondary education teachers to integrate technology in educational practice", *Computers & Education*, Vol. 50/3, pp. 1084-1091, http://dx.doi.org/10.1016/J.COMPEDU.2006.10.006. [6]

Park, S., E. Na and E. Kim (2014), "The relationship between online activities, netiquette and cyberbullying", *Children and Youth Services Review*, Vol. 42, pp. 74-81, http://dx.doi.org/10.1016/J.CHILDYOUTH.2014.04.002. [12]

Patterson, L., A. Allan and D. Cross (2016), "Adolescent bystanders' perspectives of aggression in the online versus school environments", *Journal of Adolescence*, Vol. 49, pp. 60-67, http://dx.doi.org/10.1016/j.adolescence.2016.02.003. [51]

Ribble, M., G. Bailey and T. Ross (2004), "Digital citizenship: Addressing appropriate technology behavior", *Learning & Leading with technology*, Vol. 32/1, p. 6, https://eric.ed.gov/?id=EJ695788. [1]

Runions, K. and M. Bak (2015), "Online moral disengagement, cyberbullying, and cyber-aggression", *Cyberpsychology, Behavior, and Social Networking*, Vol. 18/7, pp. 400-405, http://dx.doi.org/10.1089/cyber.2014.0670. [49]

Sabella, R., J. Patchin and S. Hinduja (2013), "Cyberbullying myths and realities", *Computers in Human Behavior*, Vol. 29/6, pp. 2703-2711, http://dx.doi.org/10.1016/J.CHB.2013.06.040. [27]

Saskatchewan Advocate for Children and Youth (2017), *Shhh… Listen We Have Something to Say: Youth Voices from the North*, www.saskadvocate.ca/sites/default/files/u11/listen_we_have_something_to_say_nov_2017.pdf. [26]

Selwyn, N. (2008), "A safe haven for misbehaving?", *Social Science Computer Review*, Vol. 26/4, pp. 446-465, http://dx.doi.org/10.1177/0894439307313515. [59]

Stroud, S. (2014), "The dark side of the online self: A pragmatist critique of the growing plague of revenge porn", *Journal of Mass Media Ethics*, Vol. 29/3, pp. 168-183, http://dx.doi.org/10.1080/08900523.2014.917976. [32]

Suler, J. (2004), *The Online Disinhibition Effect*. [50]

Swearer, S. and S. Hymel (2015), "Understanding the psychology of bullying: Moving toward a social-ecological diathesis–stress model.", *American Psychologist*, Vol. 70/4, pp. 344-353, http://dx.doi.org/10.1037/a0038929. [24]

UNESCO (2019), *Behind the numbers: Ending school violence and bullying*, https://unesdoc.unesco.org/ark:/48223/pf0000366483. [17]

UNICEF (2017), *The State of the World's Children: Children in a Digital World*, www.soapbox.co.uk. [5]

Van Geel, M., P. Vedder and J. Tanilon (2014), "Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: A meta-analysis", *JAMA Pediatrics*, Vol. 168/5, pp. 435-442, http://dx.doi.org/10.1001/jamapediatrics.2013.4143. [23]

Van Ouytsel, J. et al. (2016), "Sexting: Adolescents' perceptions of the applications used for, motives for, and consequences of sexting", *Journal of Youth Studies*, pp. 1-25, http://dx.doi.org/10.1080/13676261.2016.1241865. [33]

Volk, A., R. Veenstra and D. Espelage (2017), "So you want to study bullying? Recommendations to enhance the validity, transparency, and compatibility of bullying research", *Aggression and Violent Behavior*, Vol. 36, pp. 34-43, http://dx.doi.org/10.1016/J.AVB.2017.07.003. [30]

Waasdorp, T. and C. Bradshaw (2015), "The overlap between cyberbullying and traditional bullying", *Journal of Adolescent Health*, Vol. 56/5, pp. 483-488, http://dx.doi.org/10.1016/j.jadohealth.2014.12.002. [19]

Walrave, M. et al. (2015), "Whether or not to engage in sexting: Explaining adolescent sexting behaviour by applying the prototype willingness model", *Telematics and Informatics*, Vol. 32/4, pp. 796-808, http://dx.doi.org/10.1016/J.TELE.2015.03.008. [36]

Wang, X. and W. Xing (2018), *Exploring the Influence of Parental Involvement and Socioeconomic Status on Teen Digital Citizenship: A Path Modeling Approach*, www.j-ets.net/ets/journals/21_1/17.pdf. [64]

Chapter 13. Building capacity: Teacher education and partnerships

As education systems increasingly respond to new societal, economic and digital needs, schools are on the front line of change. In order to respond to these changes, systems across the OECD are increasingly focusing on building capacity for their schools and teachers. Yet working with a diverse set of actors, some of whom (for example those from the private sector) have different aims and goals, is a complex challenge. This chapter focuses on two specific elements that are crucial to effective delivery of policy and practice: teacher education and partnerships. It provides a rich set of country examples of policies aimed at building teacher skills, focusing on the digital skills and emotional well-being of their students. It also highlights innovative cases of partnerships across the spectrum of actors, from families through to cybersecurity experts. It ends with an identification of some remaining challenges expressed by countries.

Introduction

As education systems increasingly respond to new societal, economic and digital needs, implementation of policies takes on new importance. A key element of successful implementation of policy reform is ensuring that local stakeholders have sufficient capacity to meet this challenge. In particular, they need adequate knowledge of educational policy goals and consequences, the ownership and willingness to make the change, and the tools to implement the reform as planned. Without these, the best policy reforms risks being derailed at the level where it counts most: the classroom. It is at this level that education policies must be implemented, and it is here that they succeed or fail (Burns and Köster, 2016[1]).

This chapter takes a closer look at two specific elements that are crucial to effective delivery of policy and practice: teacher preparation and partnerships. It is clear that in the effort to modernise today's classrooms, teachers will be on the front lines. Schools and communities depend on educators to help integrate students of different languages and backgrounds, to be sensitive to cultural, linguistic and gender-related issues, to encourage tolerance and cohesion, and to respond effectively to the needs of all students. Teachers are also expected to prepare students for the digital world – to help them learn how to use new technologies and to keep up with new and rapidly developing fields of knowledge. They are counted on to encourage students to be self-directed learners, and they play an active role in constructing their own learning environments and being open to the community.

These shifts in the roles and duties of teachers come at the same time that attracting and retaining effective teachers is a challenge faced by many OECD countries (OECD, 2005[2]; OECD, 2010[3]). They also come at a time of rapid change in the digital world. This requires that educators progressively need to work in partnership with a wide variety of other actors. These include parents and families, but also health professionals, psychologists and law enforcement. Increasingly, they can also include cybersecurity professionals and programmers. Developing, maintaining and supporting partnerships with such a diverse set of actors, some of whom (for example those from the private sector) have very different aims and goals, is a complex challenge. This chapter looks at how countries are currently addressing these issues through teacher education and partnerships, drawing from responses to the 21st Century Children Policy Questionnaire.

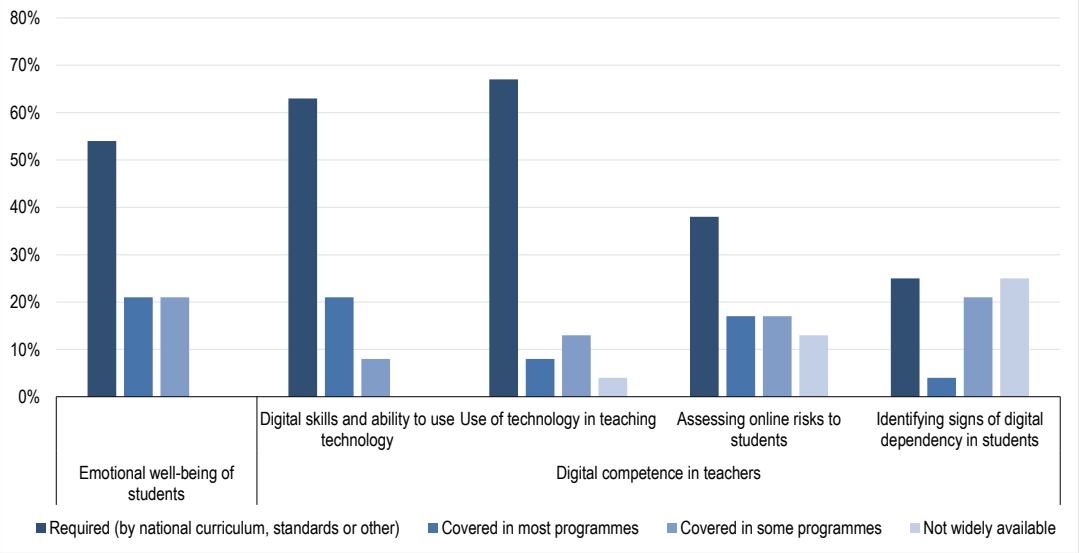
Supporting teachers for modern classrooms

Educating teachers for the challenges of modern classrooms is a complex and multifaceted endeavour. Breaking patterns and learning new behaviours requires ongoing training and preparation as well as support and capacity building (OECD, 2010[3]). But education systems are not always particularly successful on this front: TALIS 2018 reveals that although many teachers actively participate in professional development, they consistently report high needs in certain areas, particularly teaching students with special needs and using ICT skills for teaching. The most commonly cited reasons for not taking part in available training were "conflict with work schedule" (54%) and "no incentives for participating in professional development" (48%) (OECD, 2019[4]). There is thus room for improvement both in terms of better targeting types of professional development that reflect teachers' needs, and in seeking ways to provide more flexible timing and delivery of training opportunities.

National curricula, standards and guidelines for teaching represent a fundamental first step toward helping teachers frame their professional competences around integrating

knowledge and skills to protect and foster the emotional well-being and digital literacy of students. Figure 13.1 shows the responses of countries to the 21st Century Children Policy Questionnaire in terms of the topics included in teacher education programmes, either initial or continuous professional development.

Figure 13.1. Topics covered in teacher education (initial and continuing professional development)



Note: Responses indicate the proportion of systems that confirmed the topics were covered in existing teacher education in their systems. 24 countries and systems responded to this question.
Source: 21st Century Children Policy Questionnaire

Emotional well-being

18 out of 24 countries and systems that responded to this question reported that emotional well-being is required at the national level or covered in most teacher education programmes, with no countries responding that it was not widely available. This finding is particularly interesting given that respondents also frequently highlighted that it was difficult to draw a general picture of how professionals have dealt with emotional well-being given existing regional, teacher and school autonomy.

Digital competence in teachers

Countries generally provide support to teachers to acquire digital skills and to use technology in their teaching. 15 of the 24 countries responding to this question indicated that digital skills and ability to use technology were required (by national curriculum, standards or other) and another five indicated that it was covered in most programmes. Similarly, 16 of the 24 countries indicated that the skills to use technology in teaching were required (by national curriculum, standards or other) and another two indicated that it was covered in most programmes.

However, there was far less training available for assessing online risks or identifying signs of digital dependency in students. In the Policy Questionnaire, 30% of systems reported that training on assessment of online risks was covered only in some programmes or not at all. For identifying signs of digital dependency, 45% of systems reported that it was only

covered in some programmes or not at all. These figures are at odds with the high policy priority given to online risks (see Chapters 2 and 12).

Countries appear to prioritise fostering the digital skills of teachers broadly, perhaps assuming or inferring that this will also improve their ability to assess online risks or other threats to well-being. However it is important to flag that these are unique skills and explicit attention should also be given to fostering them in teachers. This is particularly important given how quickly the landscape of online risks changes (see also Chapter 10). And, as highlighted in Chapter 12, there is also room for improvement in the training and education available to teachers in teaching these skills to their students: almost half of the systems reported that their existing teacher education programmes do not provide widespread training to teachers to educate students in online risks.

The gap between the importance given to preparing teachers to acquire digital skills and use technology in their teaching on one hand, and supporting them in learning to identify online risks on the other, is important to underline. Similarly, the disconnect between educating students to develop responsible online behaviour and managing the risks of digital technologies (see Chapters 11 and 12) illustrates some of the challenges around the integration of technology in schools. One important issue is that preparing students to live in a digital(ised) society involves interdisciplinary skills and student behaviour both inside and outside of school. This makes establishing clear and coherent standards for practice much more difficult.

Policies and practices to support teachers

As laid out above, new expectations for teachers require building new skills and capacity for the teaching workforce. Although there is room for improvement in the support that can be offered to teachers in both their initial teacher education and ongoing professional development, a number of interesting measures have been developed. These can be broadly grouped into three main approaches:

- curriculum reforms and extension
- formal teacher education and training
- network approaches to teaching and learning.

Curriculum reform and extension

In the Policy Questionnaire, policy makers often referred to a new national curriculum as a key resource for improving the use of technology in the classroom, fostering the teaching of digital skills and supporting the emotional well-being of students. In some cases, policy makers mentioned that the curriculum currently recognises the central importance of pupils' mental, emotional and social well-being, as is the case of the *Curriculum for Excellence* in Scotland (United Kingdom), or the skills that are required to fulfil these goals, as in the competences of the Finnish *National Core Curriculum for Basic Education*. In other cases, emphasis is placed on the way the curriculum provides models of how to use technology in the classroom or what should be the ideal conditions for students to develop skills critical in that area, as in the new *Basic Education Curriculum* in Mexico.

Countries also described measures that help teachers and schools develop certain areas of the curriculum, with a particular focus on technology. In many cases, for example Quebec (Canada), Mexico and New Zealand, systems have developed plans dedicated to the implementation of digital technologies, building on specific areas described in their

respective curricula. These plans include detailed curriculum implementation actions as well as resources to help schools.

In addition to reforming the curriculum, another approach used by countries is to take certain curricular development measures to help extend the existing curriculum. Examples that focus on the importance of the social and physical environment of students include New Brunswick's (Canada) *Joint Consortium for School Health* (JCSH).

New pedagogical approaches

The important role of pedagogies is reflected in UNESCO´s 'Happy Schools' framework (UNESCO, 2016[5]). Key elements include variables such as fair workload, teamwork, funny and engaging pedagogical approaches, learner freedom and engagement, relevant content, and defining learning as a team process between students and teachers. Pedagogies are important for the well-being of students in two ways:

1. By how content is delivered and how the core schooling experiences of children are framed. For example teachers can play a role in reducing schoolwork-related anxiety of their students, acknowledge students' feelings about the tasks, avoid excessive pressure and control, provide supportive relationships with their students, and explicitly connect with students' worldviews as a way to improve the overall experiences of students (OECD, 2017[6]).
2. Certain pedagogies and teaching practices can explicitly target particular toxic forms of behaviours and promote more inclusive and safe environments.

Examples of the supports available for teachers are highlighted in Box 13.1.

Box 13.1. Promoting well-being through pedagogy

Personalising learning through ICTs: Project Leerling (Pupil) 2020

The Pupil 2020 project in the Netherlands supports secondary teachers and their schools in developing a vision of personalised learning and its implementation in practice, placing a significant emphasis on the use of ICTs. At MY College, in one of the many examples featured in the project, teachers describe how thinking in learning goals and working with iPads, coaching pupils, and decreasing control so that each student can learn at their own pace and level, have transformed the school radically.

Tutorial support to foster positive discipline

In Portugal, the Specific Tutorial Support (Legislative Order no. 4-A/2016) is intended for students in the 2nd and 3rd cycle of basic education who accumulate two or more grade repetitions throughout their school career. It aims to increase their involvement in educational activities through the planning and monitoring of their learning process.. Quality tutoring can be an important factor for self-regulation of learning, and become a platform for strengthening positive discipline, which focuses on strengthening positive behaviour rather than just punishing negative behaviour (which can lead to the disengagement of vulnerable students).

In addition to these initiatives, attention must be paid to the quality of the training provided. Even if skills such as working with different languages, cultures and religions, and promoting and supporting student well-being and digital literacy initiatives are covered in

teacher education programmes, this does not always mean they are effective. There is a need to improve the design and development of the current training on these issues so that it better aligns with the reported need.

Formal teacher education and training

Only a few countries mentioned specific actions taken within initial teacher education. One example is the *Digital Laboratoriums* implemented in Norway to develop the digital competences of teacher candidates.

Overall, the majority of the responses to the 21st Century Children Policy Questionnaire concentrated on professional development programmes to address both technological issues in the classroom and the social and emotional development of students. Sometimes the support is embedded within the school through the creation of teams with specialised roles. Examples include the *Digital Technologies in Focus*, delivered by the Australian Curriculum, Assessment and Reporting Authority (ACARA), which provides support to 160 disadvantaged schools with information and communication technology (ICT) curriculum officers. In France, a recent *national body of educational psychologists (PsyEN)* has been mobilised to better attend to the range of cognitive and social needs of students by collaborating with teachers and families.

On-site initiatives such as these provide opportunities for teachers at the same school to engage in active learning and experimentation. This allows for collective participation and sharing reflections (Bautista and Ortega-Ruiz, 2015[7]). In addition, carefully developed online learning resources can also offer dynamic and flexible opportunities for teacher professional development. In particular, when resources are sustained, intense and backed by a dedicated training programme over time, they are more likely to have a bigger impact on the professional development of teachers (Garet et al., 2001[8]).

Massive Open Online Courses (MOOCs) also provide ongoing professional development in digital skills. An example is *Webwise* in Ireland, which helps integrate Internet safety into teaching and learning. Innovative approaches to online learning are included as well. In Portugal, blended learning training courses are being introduced to help psychologists develop attitudes and skills to support teachers in adopting intervention strategies in the classroom to prevent and inhibit disruptive and bullying behaviours.

The Australian Government has developed two comprehensive portals, the *Digital Technologies Hub* and the *Student Well-being Hub*, to provide quality-assured learning resources and activities to support implementation of the Australian Curriculum. Both initiatives target students, parents and school leaders, provide activities and events, and host new content and resources as they are developed. The *Student Well-being Hub* also links to the *Bullying. No Way!* website, which provides helpful information and advice about bullying and promotes the National Day of Action against Bullying and Violence, as well as a link to the *Australian Student Well-being Framework*, a foundational document to support school communities to build positive and inclusive learning environments. The Framework is based on evidence that demonstrates the strong association between safety, well-being and learning.

In addition to formal education for teachers, there are also a variety of initiatives that work with teachers and other actors (e.g. parents, mental health professionals, etc.). These are illustrated in Table 13.1.

Table 13.1. Training for teachers, parents and other actors

	Target group	Aims and methods
Ireland	Primary and post-primary teachers	Training in restorative practice, as an evidence-based approach to address bullying
Portugal	Psychologists in public schools	Develop attitudes and skills to support teachers in adopting strategies of intervention in the classroom to prevent and inhibit disruptive and bullying behaviours Develop attitudes and skills that will allow them to develop their relationship with ECEC and first cycle teachers
Russia	Teachers and school psychologists	Training to recognise signs of depression, suicidal tendencies and other mental health problems
Scotland (United Kingdom)	Teachers and educators	Training through Career-Long Professional Learning (CLPL) for working in partnership with families and to develop capacity and resilience skills for young people and all those who play a role in their lives to prevent and deal with bullying
Turkey	Parents	Address family and peer relationship issues and stress as well as issues related to anxiety over grade progression

Source: 21st Century Children Policy Questionnaire

Network approaches to teaching and learning

Networks play a key role in the development of coherent pedagogical approaches, support materials, professional sharing and learning, and leadership (Paniagua and Istance, 2018[9]). Networks can build upon whole school communities, but also on individuals from a diverse range of organisations and extend their professional peer network beyond their own school. These peer networks can provide fresh eyes to reflect on the particular school culture and the way the community approaches their students' needs.

When providing examples of promising networks, some countries highlighted the important role of existing networks of schools to advance and improve teacher practices and professional learning. In the case of *Person@lize*, in the Netherlands, four school boards and eighteen schools from both primary and secondary education collaborate to learn from each other and to inspire each other. The overall aim is to connect with individual learning needs and achieve better learning outcomes by focusing on personalised learning experiences.

Other networks and collaborations target specific practices, for example using social and emotional skills and arts as a way to promote children and young people's well-being. The *Student Success Network*'s (New York, United States) philosophy is that students need more than academic skills to realise their potential, and that social and emotional learning is essential to prepare them for success in life. Defining themselves as a movement, members of the network range from social entrepreneurial organisations, such as I-Mentor and Citizen Schools, to long-standing community-based organisations, such as the YMCA and Good Shepard Services, to those that serve special needs students, such as Ramapo for Children (Olson, 2018[10]). In order to build up the movement, they provide training sessions for creating workshops among their members, organise events and have developed an online platform to strengthen the sharing of resources and collaboration. Key partners at NYU´s Research Alliance for New York City Schools help improve the quality of the data gathered and its use.

Cross-sectoral collaboration and partnerships

As many challenges go beyond the walls of school settings, parental and wider community involvement play a critical role in addressing the challenges of digital and emotional well-being. Collaboration between schools and their communities to work together and engage other sectors and agents can take different forms (OECD (2017[11]), adapted from Stevenson and Boxall (2015[12])):

- *Schools as anchor institutions in their communities*. In this configuration, partnerships are likely to be basic and collaboration with other agents limited to the individual initiatives of either schools or a particular actor from the community.
- *Schools' entrepreneurial relationships* with different members of the community, collaborating in joint initiatives and transferring knowledge-based expertise to policy makers and public services. Here, partnerships are more collaborative and engagement with other agents is more dynamic.
- *Involvement of schools in the life of the wider community* through a variety of corporate social responsibility activities, ranging from outreach programmes with community groups to opening campus facilities to public and outside users. On this level, partnerships are stronger and reaching other agents is a joint effort of both schools and their communities.

These partnerships are often strategic collaborations aimed at expanding the capacity of schools to improve the way they build and reinforce digital skills (for example, helping teachers to apply technology in the classrooms and develop new pedagogical approaches) and reinforce well-being (e.g. addressing bullying and fostering healthy habits).

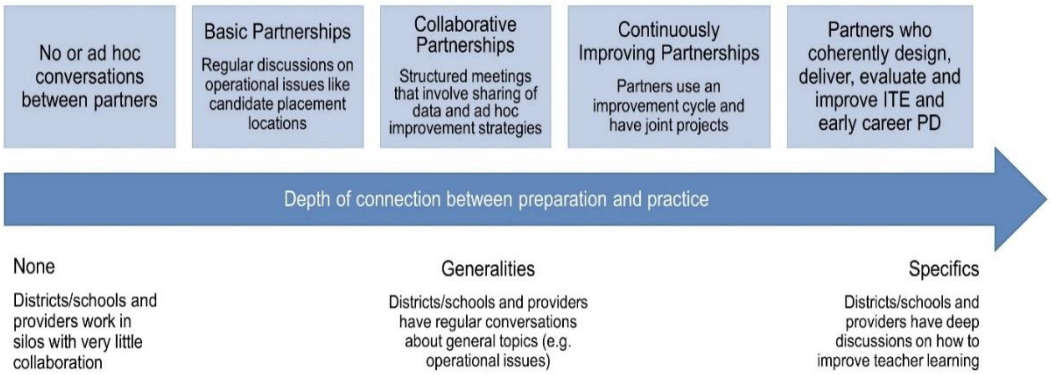
The following section will look at the types and forms of partnerships that have been reported across OECD countries and systems, with a special focus on those addressing digital skills and emotional well-being.

Types of partnerships between schools and other external actors

While policy makers have been incorporating new competences for teachers into national curricula and standards, they are also mindful that they should avoid increasing the burden on teachers that may come along with these often complex demands. They also work to avoid diluting the role of teachers, or creating overlapping competences with professionals from other areas. Teachers, first and foremost, are not seen as specialists for health or psychological issues, but as key players to connect and collaborate with other specialists and services.

Partnerships can range from ad hoc discussions between different actors to designing, evaluating and improving programmes together, as shown in Figure 13.2. Between these two extremes, it is possible to identify different levels of depth when establishing partnerships. These levels of depth do not necessarily measure the quality of the collaboration, as this would depend on the goal and the nature of the actors involved in the partnership. For example, collaborations between families and teachers can work well for particular objectives with basic or collaborative partnerships.

Figure 13.2. Depth of partnerships and collaboration



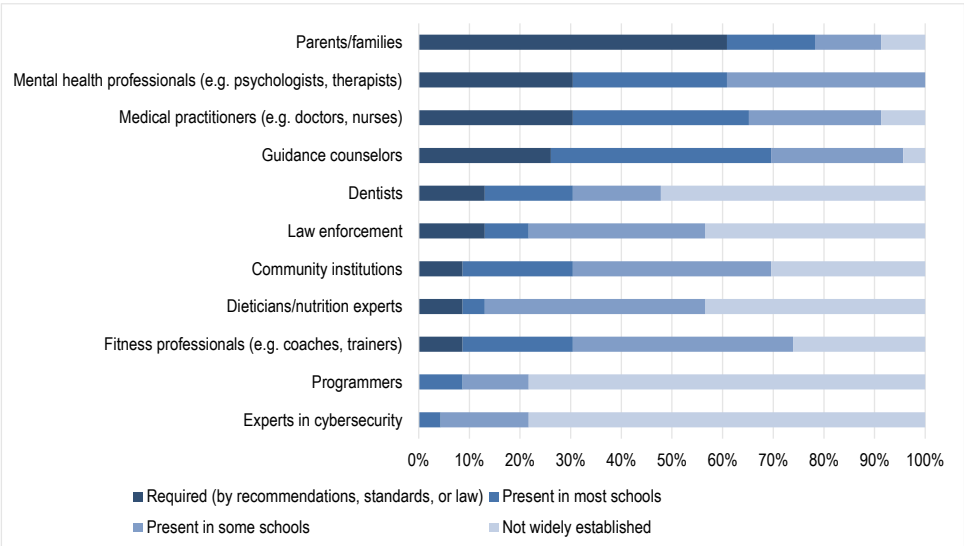
Note: This continuum was proposed for initial teacher preparation but it can also be applied more generally across the system.
Source: Toon and Jensen (2017[13])

The nature of partnerships is strongly dependent on the authority and expertise of the actors involved and on the resources mobilised to make it happen. Mechanisms to support the collaboration of different partners and institutions include:

- establishing formal feedback loops or accountability measures
- collaborative learning practices
- dedicated time and ongoing funding
- developing professional responsibility, agency and trust.

Countries participating in the Policy Questionnaire were asked to describe the different types of partnerships between their schools and other external actors (see Figure 13.3).

Figure 13.3. Partnerships between schools and external actors



Note: 23 countries and systems answered this question.
Source: 21st Century Children Policy Questionnaire

Partnerships with parents and families

The most common type of partnership reported in the Policy Questionnaire was with parents and families. Almost two-thirds of the systems that responded to this question reported that family partnerships are required in schools, and only two commented that these types of partnerships are not widely established in their systems.

However, these responses must be interpreted with caution. On the one hand, policy makers often place emphasis on partnering with families, acknowledging the central role of families in protecting and fostering the well-being of children. This is reflected in the many national plans and initiatives targeting families as a key actor. On the other hand, the international literature highlights the challenges of establishing school-parent collaborations, particularly when trying to involve hard to reach parents in deep, substantial collaboration (see Box 13.2).

Box 13.2. School-family partnerships: Possibilities and limits

Since the publication of the Coleman report (Coleman et al., 1966[14]) in the United States and the Plowden report (Plowden, 1967[15]) in the United Kingdom, a growing wave of evidence has demonstrated how the education level of parents, their financial resources and attitudes, and the overall influence of the home environment are among the best predictors of young people's academic achievement (OECD, 2018[16]). Involving and partnering with parents is thus encouraged in order to help realise the potential of all students, especially those most vulnerable.

However, while participation with school activities and governance seems to work well for those families that know how to 'work and navigate' the school system, it has proved more difficult to induce participation among families from vulnerable groups who are more at risk of education inequalities (Corter and Pelletier, 2005[17]; Furstenberg, 2011[18]; Gordon and Cui, 2014[19]). This can be particularly true in the digital space, as parents from disadvantaged backgrounds are less likely to have the digital skills and knowledge required to effectively participate. One example is that parents tend not to be aware of minimum age requirements for children in establishing social media profiles (e.g. on Instagram and Facebook, with a minimum age of 13), or how best to identify and react to online risks such as security and privacy concerns.

Nawrotzki (2012[20]) points out that one challenge within parental participation in schools comes from how schools reward certain forms of parental participation over others. Conflicts with work schedules, childcare needs, transportation problems, lack of familiarity with the institution and not speaking the same language as the teacher are just some of the participation barriers faced by parents (OECD, 2017[6]).

While the idea of family participation as a way to overcome educational inequalities continues to be an issue of debate (Paniagua, 2018[21]), research based on forms of collaboration that addresses the needs of families and students rather than asking for 'ideal parenting' has shown promising outcomes with vulnerable groups (Lopez, Kreider and Coffman, 2005[22]; Perez Carreón, Drake and Calabrese, 2005[23]). One way forward might be to focus on school-family partnerships that are less school-centred and more aimed at the community, and establishing trustful relationships with parents, as laid out below.

Table 13.2. Moving towards community-based models of parental involvement

Traditional School-Centred Model	Community-Based Model
Activity based	Relationship based
Parents as individuals	Parents as members of community/collective
Parents follow school agenda	Parents as leaders and collaborators in setting agenda
Workshops that provide information	Training for leadership development and personal growth
School to parent communication	Mutual exchange

Source: Warren et al. (2009[24])

Partnerships with medical and mental health professionals

After partnerships with parents and families, mental health professionals and medical practitioners are the next set of commonly reported school partnerships. These professionals, are required in almost a third of the countries and are widely present in another third. The traditional connection between education and physical health is becoming increasingly augmented by mental health specialists, as awareness grows about the importance of emotional well-being. In addition, the prevalence of these partnerships might be related to the authority of these actors and the feasibility of developing a supportive role for the work of teachers – which is clearer in the case of psychologists.

Several responses to the Policy Questionnaire described the way education and health networks and ministries work together to promote a joint vision and reinforce the coherence of actions (e.g. New Brunswick (Canada), Nova Scotia (Canada) and France). In some cases, this shared vision establishes specific goals, such as targeting vulnerable children, as in the *0-24 collaboration* in Norway (see Box 13.3), providing access to specialist support and ways to improve mental health for young people as in the *Headspace* project in Scotland (United Kingdom), or focusing on babies, young children and their families, as in the *First 5* initiative in Ireland.

The programme *Stronger for Tomorrow*, a collaboration between the Ministries of Health and Education in New Zealand, supports schools with specialised workers that have a diverse range of skills, including psychologists, social workers, health specialists from indigenous groups (whānau ora kaimahi), counsellors and youth workers (see Chapter 3). Similarly in the French community of Belgium, schools voluntarily participated in the pilot programme *Cellules Bien Être*, where a well-being team from six services from different sectors (e.g. health, youth) collaborated with teaching staff.

Other examples include the *Healthy Students Toolkit* in the United States, which gathers information about resources, programmes and services offered by non-governmental organisations in different states to outline high-impact opportunities. These include the importance of helping eligible students enrol in health insurance, the provision of Medicaid and other services in schools, promoting nutrition and physical activities and building local partnerships with health services. In Finland, the education provider appoints a steering group for pupil welfare with representatives from health care, psychologists and social workers. Prince Edward Island's (Canada) student well-being teams include school health nurses, mental health clinicians, school outreach workers, counselling consultants and occupational therapists.

Partnerships with digital experts: Creating the conditions for using technology in schools

Fostering digital skills and incorporating ICTs in the classroom involves more than simply trading textbooks for tablets. It raises the challenge of unprecedented investment in education technology and professional development to build the capacity of teachers for understanding the use, content and pedagogical implications of technology. Further, it also implies establishing stronger connections with the whole community, for most of the opportunities and challenges that come with the use of technology lie both inside and outside the schools. Therefore, comprehensive efforts to bring families and community organisations together are needed to ensure digital learning does not become another source of disadvantage (Hooft Graafland, 2018[25]).

Despite the growing emphasis on equipping teachers with digital competences, countries reported a low rate of partnerships with programmers and experts in cybersecurity. This is potentially due to a number of factors. Firstly, areas of programming/coding and cybersecurity are not among the key priorities of policy makers regarding technology and schools, despite the attention paid to protecting children from online risks. Furthermore, teachers are often expected to integrate digital skills into existing subjects – which would be a powerful way forward as long as they are proficient in these skills. This is however not clear, as highlighted with the lack of access to teacher training in these subjects in the first half of this chapter.

Schools that are successful in using technology effectively establish strong partnerships with key stakeholders from universities, technology companies and other organisations (Levin and Schrum, 2013[26]). This is not always straightforward, as it can involve actors with conflicting agendas, which in turn can undermine the capacity to establish healthy collaborations (Abrams, Chen and Downton, 2018[27]). The formation of partnerships with private sector companies (for example, cyber security experts or representatives of large platforms/service providers such as Google or Microsoft) can be particularly challenging, given the different agendas and expectations of the sectors. However, given the speed of technological change, it is almost inevitable that a way must be found for these actors to work together. This is especially true given the decentralised nature of many education systems, which effectively locate the responsibility for protecting student data and for ensuring the security of school and class technology infrastructure to the level of the school (see also Chapter 14).

A variety of examples of effective partnerships were provided in the Policy Questionnaire responses. For example, in New Brunswick and Nova Scotia (Canada), *Brilliant Labs*, a not-for-profit technology and experiential learning platform, collaborates with schools to implement *Makerspaces*. These labs build on the pedagogical approach 'Maker Culture', encouraging learners to use, explore and experiment with diverse materials and tools to build up engines as well as more complex tools or artefacts, providing an authentic learning experience that activates previous Science, Technology, Engineering, Art and Mathematics (STEAM) knowledge. *Brilliant Lab*'s makerspaces are managed by their staff, who provide support for setting up the design of the space and professional development. Schools, in turn, determine the specific type of equipment needed and are expected to leverage their traditional funding sources and practices. The success of this partnership is illustrated by how the maker movement is being implemented in hundreds of schools across Atlantic Canada and by their 'platform' nature, aimed at encouraging and preparing schools to deliver maker opportunities rather than providing a one-off service (MakerMedia, 2019[28]).

Although it is more focused on providing the infrastructure, the ambitious pilot initiative launched by the Greek Ministry of Education is similar in that it has implemented a network of 145 open technology laboratories across the country in partnership with Building Infrastructure and the National Banks's i-bank. The labs consist of a network of workstations with Raspberry PI, robotics kit, 3D printers and scanners, interactive projectors, multifunction peripherals and various sensors. The aim is that the network will develop into a broader professional community of practice around the effective use of ICTs.

Other actions revolve around supporting partnerships for the professional development of teachers. In Ireland, the *Schools Excellence Fund – Digital* invites clusters of 4-6 schools to work together on innovative projects in teaching and learning using digital technologies. These clusters can receive up to EUR 30 000 to run a project over a three-year period. Examples of these clusters include a cluster of six post-primary schools in Dublin, Cork and Westmeath, working together on a project that will use drones to record footage of the local areas to inform core elements of the Junior and Senior Cycle Geography curricula, while another cluster of Midlands post-primary schools are using industry-lead training in MoJo (mobile journalism) video content creation to enhance teaching, learning and digital literacy among educators and students in the cluster schools (DES, 2018[29]).

Partnerships with community institutions and law enforcement

Community involvement is one of the key factors for effective intervention design. For example, many promising childhood intervention programmes to enhance social and emotional skills often include parental training and involvement, and one of the common features among successful bullying prevention programmes is that they take a holistic approach involving the whole community (Choi, 2018[30]). By involving the community in intervention design and implementation, there is often an opportunity to make use of existing infrastructure and build on the strengths in the community (Hooft Graafland, 2018[25]).

Community institutions and law enforcement partnerships represent a diverse spectrum of actors and services, which in the former case includes people who work on a voluntary basis. This means that the ways in which schools can engage with community institutions and law enforcement are much more varied than with other actors. For example, over two-thirds of the countries and systems that responded confirmed that partnerships with community organisations are required, present in all schools or present in some schools. There is some potential confusion around this figure, however, given the overlapping role of parent associations, which can fall under the label of both "community organisation" and "parent/family involvement".

One example of a community partnership comes from Providence (United States), where the school strategy *Afterzone* was developed as a response to the lack of organised activities available for middle schoolers. Implemented by the After School Alliance, the initiative coordinates community-based organisations to provide after school programmes focusing on teamwork, problem solving and engagement in education. All participating organisations are held to a single set of quality standards and receive training and support to help students acquire essential skills (Olson, 2018[10]). An independent evaluation found the programme reduced school absences among its participants by 25% after two years, with the greatest benefit for students who participated in at least thirty days of programming. Further, those students who reported high levels of engagement in the programme thought more about their future, had better social skills and demonstrated more positive behaviour (Kauh, 2011[31]).

Another example comes from Latvia, where the Ministry of Education invited vocational cultural education institutions to carry out the *RaPaPro Creative Partnership Programme*. Schools had to open their doors to the public and look for partners among businesses and within the social sphere, which also included neighbouring schools and local residents. This meant cooperating so as to be able to learn from each other's experience, collaborate, innovate, solve problems and unleash the potential of creativity. Full understanding of the idea of creative partnerships is demonstrated as equality between all parties, where everyone is a benefactor as well as a beneficiary, be it student, teacher, businessman, doctor or mayor of the city. Between 2014 and 2016, 16 *RaPaPro* projects were implemented through different forms of collaboration, including music education students collaborating with media industry representatives, design education students looking for responsive partners between business education schools and ceramic industry companies, or dance education students engaging with design education students and craftspeople.

In the case of law enforcement, given that schooling includes a diverse range of actions that are mandatory by law, it is likely that most schools – and in particular those working with students more likely to suffer from educational inequalities – are in constant contact with law enforcement services. This continuous contact might be considered a form of partnership by some countries – even if these are singular collaborations to address specific targets – while others might consider this continuous contact as a form of routine process or protocol that does not match the idea of partnership. No specific examples of effective partnerships with law enforcement were provided by respondents in the Policy Questionnaire.

Fostering a holistic approach to the well-being of all students

The examples above illustrate that a strong partnerships can be established between two agencies or ministries. They can also be harnessed to create an interdisciplinary, whole-of-government approach, including not only education and health, but also social development, public safety, justice and other regional authorities.

A key goal of many of these partnerships is using the power of schools to detect and reach vulnerable students. For example, in Central Texas (United States), the nation-wide programme *Communities in Schools* builds partnerships with the local housing authority to provide case management, leadership development programmes for adolescent males and adult education to help parents get either the General Education Development or the English as a Second Language certificate while their infants receive care. Similarly, in Nova Scotia's (Canada) *Schools Plus*, early years centres, family resource centres and youth centres are located within schools to provide social work, health, justice, recreation and mental health services to all, and especially those most vulnerable. Another example comes from Norway (see Box 13.3).

Box 13.3. Establishing a shared view of the well-being of vulnerable children and young adults in Norway: The "0-24 Collaboration"

Vulnerable children and young adults often have complex difficulties (such as school difficulties, health problems, poverty in the family) that require follow-up from several services. The "*0-24 collaboration*" in Norway is an interdisciplinary effort between ministries, directorates and county governors to facilitate proactive, comprehensive, efficient and competent services for vulnerable children and young adults under the age of 24. This initiative has inspired other similar initiatives in Denmark, Finland, Iceland, Sweden and the autonomous islands of Greenland and Aaland, called the Nordic 0-24 Project. All of these initiatives aim at ensuring ministries and directorates design and organise the state instruments based on the needs of the municipalities and users, through better co-operation and dialogue, to ensure a long-term, close and relevant follow-up of vulnerable children and youth.

One example from this collaboration is a network of seven municipalities administered by the Norwegian Association of Local and Regional Authorities. In this network, the municipalities work with cross-sectoral learning processes, the aims of which are to develop a set of indicators for good practice in services for vulnerable children and young people. The participants in the network are primarily leaders or managers from different sectors and units within the seven municipalities. Units include schools, kindergartens, educational-psychological services, child welfare services, public health centres, school health services, family houses and the Norwegian Labour and Welfare Administration offices. At the municipal level they explicitly foster cross-sectoral collaboration, while at the national level regional authorities are in dialogue with the Norwegian Directorate for Education and Training regarding their contribution to the project.

Source: Hansen et al. (2018[32])

Another example of a holistic approach is well-being frameworks. Well-being frameworks tend to address multiple challenges through a comprehensive policy approach and are designed and coordinated by central governments. However, they are then implemented locally and focused on the school. This autonomy mirrors that of many digital policies, which are also often coordinated at the school level.

What is characteristic of well-being frameworks is that they broaden the traditional 'service-delivery' or 'protecting students' safety' mind-set, which often focused primarily on the physical dimension of well-being. While these frameworks often involve the integration of health services as part of a prevention/detection strategy, there is an increased focus on strengthening the protective factors and resilience for children through the climate around the school and learning themselves. For example, the Australian Student Wellbeing Framework supports school communities in building positive and inclusive learning environments. Its development was based on evidence that suggests a strong association amongst safety, well-being and learning. Table 13.3 highlights examples of how different systems implement well-being frameworks.

Table 13.3. School-based implementation of well-being approaches

	Well-being approach	Responsibilities of the school
Australia	Australian Student Well-Being Framework	Schools are expected to enact the principles and practices of the framework, though are given wide autonomy for how to do so.
Belgium (Flanders)	Gezonde School project	School-based initiatives to support students' mental well-being engaging parents, the environment, the class, etc. Educational packages offered to schools by various organisations that prepare interventions and resources.
France	National Health Strategy	Schools are expected to integrate a health and well-being plan (including mental health).
Ireland	Wellbeing Policy and Framework for Practice	Schools engage in a well-being promotion process, use self-evaluation to identify needs and implement practices to develop well-being of learners.
Luxembourg	SePAS and CePAS teams	The school is the locus of service delivery. The teams liaise with various organisations and external bodies addressing help and support, youth issues and mobilisations, study and professional orientation, housing and prevention.
United States	Stopbullying.gov	Schools should ensure counselling support is available for students. Schools are expected to develop strategies and programmes in collaboration with community partners.

Source: 21st Century Children Policy Questionnaire

In order to ensure smooth and effective implementation, emotional well-being frameworks should also equip teachers, parents and students with the tools they need to deal with challenges to emotional well-being. Research suggests effective intervention programmes enhance social and emotional skills and often involve engaging parents, including training, family environment, and parent-child interaction in home/school settings (Choi, 2018[30]).

Special focus: Alliances for addressing persisting and emerging forms of bullying

Bullying and cyberbullying are significantly related to multiple psychosocial and behavioural problems (Choi, 2018[30]). Given the complexities and persistence of bullying there is no easy one-size-fits-all approach to preventing it, although research suggests that schools still have a significant role in improving anti-bullying mechanisms, such as improving the communication with parents, better supervision in the playground, improved disciplinary measures, promoting healthy relationships with peers, and better classroom management. Teachers have a particularly important role, since students' perceptions of teacher´s unfair treatment is one of the strongest predictors of bullying (OECD, 2017[6]). Some of the common features of successful anti-bullying programmes are the provision of training and information to parents, holding parent-teacher meetings and improving and systematising supervision and monitoring of symptoms and activities such as bullying among children and youth (Choi, 2018[30]).

Collaboration among teachers, parents and other members of the community appears in most country initiatives to fight bullying and promote a safe environment for students. In Australia, the National Centre Against Bullying (NCAB) works with school communities, governments and industry to give advice on the creation of safe schools, with a focus on building the capacity, knowledge and skill base of a range of sectors to enable them to address the issues of bullying and well-being and drive evidence-based practices. Similarly, the Australian platform *Bullying. No Way!* promotes whole-school strategies, with a focus on encouraging the engagement of families.

In a similar vein, in New Zealand the Bullying Prevention Advisory Group (BPAG) – a collection of 18 agencies committed to reducing bullying with representatives from education, health, justice and social sectors, including Internet safety and human rights advocacy groups - have created *Bullying-free NZ*, a collection of information and resources to assist New Zealand schools in becoming bullying free. This platform includes a roadmap to tackle bullying in schools, and tools for assessing existing plans and involving the community.

Other initiatives described in the responses to the Policy Questionnaire include the involvement of external professionals in schools. In the French community of Belgium, different campaigns with third sector organisations (e.g. Child Focus, University of Peace) have been launched to fight cyberbullying specifically, including a pilot initiative to include universities collaborating with schools to implement experimental plans to help teachers prevent school violence. In the Russian Federation, the program *Stop Bullying* includes famous Russian psychologists, writers, film and theatre stars to inform children, parents and teachers about the importance of sympathy, acceptance, patience, respect and understanding of the uniqueness of each person.

In sum: A shared vision of well-being

As education systems increasingly respond to new societal, economic and digital needs, schools are on the front line of change. Communities depend on educators to help integrate students of different languages and backgrounds, to encourage tolerance and cohesion, and to respond effectively to the needs of all students, including enhancing their well-being. Teachers are also expected to prepare students for the digital world – to help them learn how to use new technologies and to keep up with new and rapidly developing fields of knowledge (OECD, 2010[3]).

These changes mean that educators are increasingly expected to work in partnership with other actors. These include parents and families, but also health professionals, psychologists and law enforcement. Increasingly, they also include cybersecurity professionals and programmers. In order to develop a coherent agenda and support strategic action, the actors collaborating in partnership need to share an explicit, common vision. Developing, maintaining and supporting partnerships with such a diverse set of actors, some of whom (for example those from the private sector) have different aims and goals, is a complex challenge.

Responding to these changes, systems across the OECD have focused on equipping their teachers with new skills through their initial teacher education and continuing professional development. There are numerous examples of policy initiatives supporting the well-being of students, as well as training teachers to develop digital skills in their students. Somewhat surprisingly, there are fewer examples of initiatives to train teachers to educate their students about digital risks, despite the high priority of these issues.

In terms of partnerships, countries reported extensive partnerships with families and parents, and increasingly also with other sectors such as health providers and mental health professionals. Less common were initiatives with programmers and cybersecurity experts. Although more difficult to manage given the different goals of public and private actors, these partnerships will need to be strengthened in order to ensure that schools and education systems can keep up with the rapid speed of technological change. This topic and discussion will be dealt with in more depth in the following chapter.

References

Abrams, S., X. Chen and M. Downton (2018), *Managing Educational Technology: School Partnerships and Technology Integration*, Routledge, New York, www.routledge.com/Managing-Educational-Technology-School-Partnerships-and-Technology-Integration/Abrams-Chen-Downton/p/book/9781138951020. [27]

Bautista, A. and R. Ortega-Ruiz (2015), "Teacher professional development: International perspectives and approaches", *Psychology, Society and Education*, Vol. 73/3, pp. 240-251. [7]

Burns, T. and F. Köster (eds.) (2016), *Governing Education in a Complex World*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264255364-en. [1]

Choi, A. (2018), "Emotional well-being of children and adolescents: Recent trends and relevant factors", *OECD Education Working Papers*, No. 169, OECD Publishing, Paris, https://dx.doi.org/10.1787/41576fb2-en. [30]

Coleman, J. et al. (1966), *Equality of Educational Opportunity*, U.S. Dept. of Health, Education, and Welfare, Office of Education. [14]

Corter, C. and J. Pelletier (2005), "Parent and community involvement in schools: Policy panacea or pandemic?", in Bascia, N. et al. (eds.), *International Handbook of Educational Policy. Springer International Handbooks of Education*, Springer Netherlands, Dordrecht, http://dx.doi.org/10.1007/1-4020-3201-3_15. [17]

DES (2018), *Schools Funded to Work Together on Experimental Projects, As Minister Bruton Rewards Excellence & Innovation*. [29]

Furstenberg, F. (2011), "The challenges of finding causal links between family educational practices and schooling outcomes", in Duncan, G. and R. Murnane (eds.), *Whither Opportunity? : Rising Inequality, Schools, and Children's Life Chances*, Russell Sage Foundation, www.jstor.org/stable/10.7758/9781610447515. [18]

Garet, M. et al. (2001), "What makes professional development effective? Results from a national sample of teachers", *American Educational Research Journal*, Vol. 38/4, pp. 915-945, http://dx.doi.org/10.3102/00028312038004915. [8]

Gordon, M. and M. Cui (2014), "School-related parental involvement and adolescent academic achievement: The role of community poverty", *Family Relations*, Vol. 63/5, pp. 616-626, http://dx.doi.org/10.1111/fare.12090. [19]

Hansen, I. et al. (2018), *Nordic 0 – 24 Collaboration on Improved Services to Vulnerable Children and Young People. First Interim Report*, Fafo, https://brage.bibsys.no/xmlui/handle/11250/2568821. [32]

Hooft Graafland, J. (2018), "New technologies and 21st century children: Recent trends and outcomes", *OECD Education Working Papers*, No. 179, OECD Publishing, Paris, https://dx.doi.org/10.1787/e071a505-en. [25]

Kauh, T. (2011), *AfterZone: Outcomes for Youth Participating in Providence's Citywide After-School System*, Puplic/Private Ventures and The Wallace Foundation, www.wallacefoundation.org. [31]

Levin, B. and L. Schrum (2013), "Technology-rich schools up close", *Educational Leadership*, Vol. 70/6, pp. 51-55, www.ascd.org/publications/educational_leadership/mar13/vol70/num06/Technology-Rich_Schools_Up_Close.aspx. [26]

Lopez, M., H. Kreider and J. Coffman (2005), "Intermediary organizations as capacity builders in family educational involvement", *Urban Education*, Vol. 40/1, pp. 78-105, http://dx.doi.org/10.1177/0042085904270375. [22]

MakerMedia (2019), *Brilliant Labs: Building Creativity, Innovation and Entrepreneurship in Atlantic Canada*, http://newsletter.makermedia.com/dm?id=D3EDCF73556229037244AE6816EC8451&fbclid=IwAR24ecZUsFY3rODLE2teO7D8TQ-8aVWTdF1ajcLv5WRh0ayWThKiaSNvzds. [28]

Nawrotzki, K. (2012), "Parent–school relations in England and the USA: Partnership, problematized", in Andresen, A. and M. Richter (eds.), *The Politicization of Parenthood. Shifting Private and Public Responsibilities in Education and Child Rearing*, Springer Netherlands, Dordrecht, http://dx.doi.org/10.1007/978-94-007-2972-8_6. [20]

OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/1d0bc92a-en. [4]

OECD (2018), *Teaching for the Future: Effective Classroom Practices To Transform Education*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264293243-en. [16]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [6]

OECD (2017), *Schools at the Crossroads of Innovation in Cities and Regions*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264282766-en. [11]

OECD (2010), *Educating Teachers for Diversity: Meeting the Challenge*, OECD Publishing, Paris, http://dx.doi.org/10.1787/20769679. [3]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, OECD Publishing, Paris, http://www.oecd.org/edu/teacherpolicy. [2]

Olson, L. (2018), *School-community Partnerships: Joining Forces to Support the Learning and Development of All Students*, https://assets.aspeninstitute.org/content/uploads/2018/04/Community-School-Partnerships-Case-Study.pdf?_ga=2.161057341.1885640925.1554812794-1915899689.1554373626. [10]

Paniagua, A. (2018), "Enhancing the participation of immigrant families in schools through Intermediary Organizations? The case of Parents' Associations in Catalonia", *International Journal of Qualitative Studies in Education*, Vol. 31/2, http://dx.doi.org/10.1080/09518398.2017.1349959. [21]

Paniagua, A. and D. Istance (2018), *Teachers as Designers of Learning Environments: The Importance of Innovative Pedagogies*, Educational Research and Innovation, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264085374-en. [9]

Perez Carreón, G., C. Drake and A. Calabrese (2005), "The importance of presence: Immigrant parents' school engagement experiences", *American Educational Research Journal*, Vol. 42/3, pp. 465-498, http://dx.doi.org/10.3102/00028312042003465. [23]

Plowden, B. (1967), *Children and Their Primary Schools: A Report of the Control Advisory Council for Education (England). Vol. 1: Report*, HMSO, London. [15]

Stevenson, M. and M. Boxall (2015), *Communities of Talent: Universities in Local Learning and Innovation Ecosystems*, PA Consulting, www.paconsulting.com/insights/how-can-local-learning-partnerships-overcome-our-national-skills-deficit/. [12]

Toon, D. and B. Jensen (2017), *Teaching our Teachers: A Better Way - Developing Partnerships to Improve Teacher Preparation*, Learning First, Melbourne, http://learningfirst.com/wp-content/uploads/2018/03/2columnsITECoPPaper2PartnershipsFINAL17Nov17.pdf. [13]

UNESCO (2016), *Happy Schools! A Framework for Learner Well-being in the Asia-Pacific*, UNESCO, https://unesdoc.unesco.org/ark:/48223/pf0000244140. [5]

Warren, M. et al. (2009), "Beyond the bake sale: A community-based relational approach to parent engagement in schools", *Teachers College Record*, Vol. 111/9, pp. 2209-2254. [24]

Part V. The pending agenda

Chapter 14. Ensuring child well-being in a digital world: The pending agenda

Empowering an active and ethical (digital) generation is a key policy goal for education ministries across the OECD. As the culmination of this volume, this chapter highlights a number of transversal themes that have emerged through work with countries. Gaps in our knowledge and areas for improvement are identified that should be filled to help countries in educating 21st century children and the opportunities and challenges they face in the modern world.

The topic of well-being in the digital age is continuously evolving, and reports such as this can become quickly outdated. The work for education systems around the world is to try to stay ahead of, or at least on top of, the curve. Policy makers, educators and researchers are encouraged to consolidate their efforts and resources to continue to provide sound evidence for future decision-making on the emotional well-being of students in a digital world.

Introduction

This publication aimed to shed light on the nature of modern childhood, with a particular focus on the emotional well-being of children in a digital age. Various trends in childhood, the challenges experienced by systems on these topics as well as the policy options proposed have been discussed along with examples of particular country practices.

The first decades of the 21st century are the intersection of a turn of a millennium and rapid technological change. One of the challenges of looking at modern childhood is that these topics tend to lend themselves to hyperbole and sensationalised by the media, for example with the introduction of new digital technologies and fears that they will "rewire children's brains". While there is a need to understand what has really changed in children's lives, it is equally important to understand what has not changed. This underlines the importance of returning to research and evidence as a starting point, in order to understand the reality of children's lives.

Another challenge is that these themes are of central importance to the education world but many of the specific elements and expertise lie outside of the sector. This is especially acute in the case of digital technologies, where the speed of change means that is it very difficult to develop a robust evidence base when studying what is essentially a moving target (for example, recent research looks at Facebook, but children are now much more likely to be on Snapchat and TikTok). This has two major implications: 1) at times the available evidence base is not sufficiently robust, with an abundance of theoretical and descriptive research and a noticeable lack of empirical findings (e.g. impacts of the use of screen time); and 2) the education sector may not always be aware of the most recent research from other fields. As a result, in addition to calling for more empirical research on the general topic, this publication has identified specific areas in which more research is particularly needed.

The improvement of the evidence base is crucial and should in turn be used to connect research to practice and better inform policy making. Although the need to better connect policy to research and research to practice is not unique to this topic, the sensitive – and sometimes political – nature of these issues and debates makes doing so particularly complex. The difficulty in connecting research to policy and practice is also exacerbated by a lack of connection among the various research disciplines doing work in this complex intersection of domains, such as medicine, neuroscience, economics, sociology, psychology and the learning sciences, to name just a few.

This chapter looks first at a number of transversal themes that have emerged across the work with countries and discussions of this publication. Gaps in our knowledge and areas for improvement are then identified, followed by orientations for policy, research and practice on assessing and improving the status quo. These orientations are necessarily general in nature, as policy solutions to particular challenges are often very context-dependent. Devising a "one size fits all" response to an inherently multifaceted issue is thus neither possible nor desirable. The general orientations presented in this chapter will be complemented by further thematic and contextual analysis in the next stage of the 21st Century Children project.

Emerging transversal themes

Throughout the chapters in this volume the following transversal themes have emerged:

- Key terms such as **well-being** and **digital literacy** are broad concepts with multiple meanings. Although there are a plethora of definitions, frameworks and assessment

tools available, there is a need to develop better definitions and holistic measurement frameworks for skills, competencies and risks in order to adequately develop and support evidence-informed policy and practice in education. This is particularly true given the need for internationally comparable evidence for the inherently borderless digital world.

- There is **a disconnect between the available research and the policy discourse** when it comes to many of the cyber risks. There is little evidence suggesting that a significant number of children/adolescents are dependent on devices to the extent that they are at risk of significant negative health outcomes, nor has there been an explosion in rates of cyberbullying, to name just two popular arguments. These claims are often supported by the media and taken up by parents, politicising the issue and applying pressure to respond quickly. This is problematic for both practice and policy, and underlines the importance of building and maintaining rigorous research on these key issues.
- **Changing attitudes and behaviours** is neither simple nor rapid. Effective solutions to common challenges in education will require supporting teachers and schools in building capacity and developing knowledge and awareness. Teacher education (both initial and continuing professional development) will need to systematically address these issues in an ongoing manner, adapting and updating along with digital tools and ecosystems.
- Given the **multi-dimensional nature** of well-being and the speed of technological change, it is essential that strong and effective partnerships be developed with multiple actors. These include actors already well known to the education system (e.g. parents) as well as actors that have traditionally not been closely connected (e.g. private technology firms). Developing mutually beneficial collaborations with these new actors will need to be particularly supported in order to effect lasting change as well as continuously develop the skills and knowledge required at all levels of the system, from central ministries to schools.
- Although this volume focuses primarily on national or regional examples of good practice, **international and regional co-operation** is central to addressing the challenges in an inherently global world. Regional and international bodies will need to continue to seek to foster communication, co-ordination and co-operation across borders.

Knowledge gaps and policy orientations

System-wide and governance issues

It is important to better understand the nature of modern childhood so that it may be taken into account in education systems. Without clear indications of what has changed (and what has not changed), what is being measured, and how the multiple factors interact, it is difficult to target efforts addressing disparities in educational performance and well-being outcomes to where they are most needed.

To accomplish this, relevant data must be collected and examined. Comparability across systems is not just desirable: it is essential in the global digital world. Developing our understanding of digital literacy and emotional well-being for all groups will benefit research, policy and practice. More specifically, this implies the following:

We need to refine our terms and measurements in order to improve analysis and policy; for example, when we talk about "digital literacy" and "resilience"

Defining and measuring digital skill and competency is an essential pre-requisite for developing relevant policy. At the present time there is a plethora of actors working on these issues, many with their own definition and measurement of key concepts, including such basics as "digital literacy", "emotional well-being", "digital citizenship" and "resilience". Without an agreed and shared definition that is nuanced and holistic, we will not be able to generate the kinds of data that are required, both to build measurements of these competencies and to build capacity of teachers and parents to help develop these skills in children.

In addition, overly broad or overly narrow definitions of key terms can lead to inaccurate assumptions and the identification of trends that do not necessarily exist and are not comparable across time and contexts. For example, terms like "Internet addiction" are generally agreed to be misleading for multiple reasons. Not only do they potentially create social stigma that is unhelpful in supporting children and young people with "problematic interactive media use", the term obscures the growing evidence that individuals who already suffer from anxiety or depression are more prone to engage in problematic use of technology. Causality is thus difficult to distinguish, and interventions will be most effective when addressing both online and offline concerns. Incorrect or misleading definitions thus not only obscure trends; they could also lead to less effective responses from policy and practice.

We need to address policy fragmentation

Although Ministries of Education are working hard to develop responses to the challenges they face, there is still a very fragmented policy environment in most systems when it comes to well-being and digital literacy. One difficulty is the inter-sectoral nature of these issues, which makes ownership and responsibility difficult to determine, particularly in the decentralised context of education in many countries. There is a difficult and long-lasting debate on the role of education in strengthening child well-being and health, and the relative responsibilities of families, education and schools, and other professionals and ministries. National strategies for coordinated policy responses across ministries and levels of government are becoming more common, but they are still not always present. And even if they have been developed, co-ordination of actors and roles requires careful attention for their implementation to be effective: as Chapter 10 points out, in most countries between four and six ministries are involved in policies related to child protection online alone.

In addition, in a digital (and therefore often global) world, developing a local or even national policy response is necessary but not sufficient. When it comes to cyber risks, for example, responsible parties might be in another jurisdiction and enforcement options are limited or even non-existent. While there are many new regional initiatives to reinforce the ability of cross-border legal and police responses, there is still considerable work to be done. Education ministries have an important role to play in this process, but at present partnerships between education, law enforcement and experts in cyber security are not widely established in most OECD countries.

We need to acknowledge the importance of culture, tradition and priorities

Increased migration, globalisation, urbanisation and digitalisation are just some of the mega-trends shaping education. Education must evolve to continue to deliver on its mission of supporting individuals to develop as persons, citizens and professionals. It must remain

relevant to continue to shape our children's identity and integration into society. But there is resistance to change, and education policy faces strong *a priori* beliefs, tied both to identity and personal experience, which can anchor systems in the past.

Delivering quality education in the 21st century thus requires adaptability and flexibility while still addressing sensitive topics related to national identity and values. This is a difficult and delicate conversation, with no one right course of action. Yet without open and active discussion, the impact of modern social, political, technological and demographic changes on schools and classrooms and the pressure on teachers to address these issues is unlikely to be adequately recognised.

In order to design, develop and implement a cohesive, system-level approach to preparing teachers for 21st century schools, open discussion among the relevant actors of changing roles and subsequent development needs is necessary. This includes acknowledging the diversity of points of view (for example, the reluctance of some parents to allow their children to take part in sex education curricula or school-based vaccination schemes). Finding the balance between the goals of education systems, the health of society at large and the rights and responsibilities of parents as central decision makers in the lives of children is crucial, and becomes especially relevant in diverse societies.

We need to adequately support our teachers

It is clear that in the effort to modernise today's classrooms, teachers will be on the front lines. Schools and communities depend on educators to help integrate students of different languages and backgrounds, to be sensitive to cultural, linguistic and gender-related issues, to encourage tolerance and cohesion, and to respond effectively to the needs of all students. Teachers are also expected to prepare students for the digital world – to help them learn how to use the technologies and to keep up with new and rapidly developing fields of knowledge and skill sets. They are counted on to encourage students to be self-directed learners, and they play an active role in constructing their own learning environments and being open to the community.

All of these issues require specific knowledge, competencies and skills on the part of teachers. However, there is a growing disconnect between the expectations placed on teachers to fulfil these multiple roles and what they feel they can actually deliver with the time and resources available to them. Professional development to help equip them with these skills is not always fit for purpose, and too often these topics are not addressed, or addressed through a sole module, often as an optional elective. As systems increasingly recognise the need to prepare teachers for a diverse set of modern roles, there must be a systematic effort to integrate these topics and strategies into the curriculum of initial teacher preparation. It is also important to build on this training throughout teachers' careers, so that they gain transversal exposure to knowledge and perspectives that can have a meaningful impact on their practice. There is also need to better connect the stages of teacher education to more thoroughly align the support they can access, and plan the timing of interventions such that they are available when they are most needed.

We need to include the voices of children

Children's voices must be present and listened to when shaping policies at all levels of the system, as recommended by the United Nations Convention on the Rights of the Child. In the digital realm, the voices of children and youth must also be heard. Although there are mechanisms in place in many of the well-being initiatives to empower youth and children

to speak and participate, more can be done to reach out to the most disadvantaged youth and younger children.

This is important, and not only from a child's rights perspective. There are at least two additional reasons that this is key:

- Including child and youth voices and perspectives will help focus more attention on the positive elements of digital technologies and the opportunities they afford. Currently there is a focus on protection and risks, which, while of course important, tends to obscure potential positive elements and the importance of empowering children and youth as active agents in their own development and education.
- Children and youth tend to be early adopters of new digital technologies and they are also the most targeted group by digital software developers and platforms. Given the speed of technological change, parents, teachers and especially policy makers will have a hard time keeping up with these developments. It is thus imperative to keep the conversation with young people going in order to understand what they are using and why.

In addition, listening to the voices of children and youth helps to better understand the nuances of behaviours and expectations. For example, in the realm of privacy, there is emerging work on children's capacity to consent to shared data, for example, and their understanding of their own privacy and how their behaviours can affect the privacy of peers (for example when they share photos or post about other children). Although it is often assumed that children and youth do not understand or do not care about their privacy, the most recent research indicates that they have a fluid understanding of their privacy, valuing specific elements over others and choosing when and where to reveal data about themselves. They may also sometimes choose to prioritise popularity (measured by the number of likes or shares on certain apps, for example) over privacy.

In general, children and youth are becoming more critical and shrewder about what they see online. This understanding and these choices need to be included when designing policy, and teaching and building digital skill and competence in the classroom.

We need to acknowledge that education cannot do it alone

Focusing on student well-being in a digital world means that educators are increasingly expected to work in partnership with other actors. These include parents and families, but also health professionals, psychologists and law enforcement. Increasingly, they also include cybersecurity professionals and programmers. Developing, maintaining and supporting partnerships with such a diverse set of actors, some of whom (for example those from the private sector) have different aims and goals, is a complex challenge. Although historically public and private partnerships have been limited in many systems, the speed of change of digital technology makes connecting to the expertise of the sector (the majority of which is concentrated in private tech firms) more imperative.

This has a number of repercussions, including thinking through what this means for the protection of education as a public good and how to build capacity across the system, from the central ministry to the classroom, to continuously learn and evolve digital competencies along with technological change. In addition, as much of the directly measured (i.e. from user behaviour) digital use data is owned by private companies such as social media platforms and other providers, there is also a need for agreement on sharing data and measurements for policy and research purposes.

Although more difficult to manage given the different goals of public and private actors, these partnerships will need to be strengthened in order to ensure that schools and education systems more generally can keep up with the rapid speed of technological change, which makes understanding both opportunities and risks a moving target.

We need to move from reactionary to proactive planning and strategy

Education must evolve and grow with our societies, anticipating change rather than simply reacting to problems. The speed of change of the digital world makes this both more difficult and more imperative. This underlines the importance of returning to research and evidence as a starting point, in order to understand the reality of children's lives and to devise responsible policy solutions to challenges observed.

This is essential given the inclusion of an ever more diverse set of actors in education policy and practice. The media, for example, have been actively involved in highlighting the various dangers and cyber risks. Concerned parents and communities use social media to share reports of what can be inaccurate or misleading trends (e.g. recent reports of Momo, which turned out to be a hoax). This puts policy makers under serious pressure to react swiftly, and as a result policy development may be more responsive to sensationalised media reporting and high profile incidents rather than driven by reliable and representative data. Proactive planning, developing strategies for generating useable data, and having it available as and when needed for policy, are all crucial in order to allow us to proactively adapt and develop along with our communities and children.

Strategic planning and governance requires alignment between evaluation, assessment and policy planning and design

Designing and developing effective policies requires identifying what works, under which conditions and for whom. Yet monitoring and evaluation are often the weakest link in the policy cycle - they can be low quality, not suited for purpose or potentially skipped altogether. They can rely exclusively on self-report or look at the picture too broadly to assess particular impacts of ambitious policies. For political or logistical reasons (e.g. timing of elections or budget cycles) decisions on whether to fund/not fund certain projects are often taken before the evaluation is completed. And while they are often not designed to deliver causal understandings of relationships, they can be mistakenly interpreted to do so.

Many of the country examples provided for the 21st Century Children Policy Questionnaire did not clearly state whether or not they had been proven to be effective. The type of evaluation used and results were also often unclear. As one of the main goals of monitoring and evaluation is to improve the factual basis for decision making, both from a policy and a political standpoint, it is crucial that these features of programme implementation and operation be continually strengthened and reinforced in education.

We need to strengthen the use of evidence-informed policy and practice in education

Barriers to using research to inform practice can include resistance on the individual level, such as when teachers or policy makers do not believe that a suggested change is appropriate. Perhaps more importantly, it may not always be clear what research findings mean and how they might be implemented in practice. Even when stakeholders are clearly

convinced of the utility of suggested changes, there may be practical barriers to implementation in terms of the time and resources required.

On a systematic level, there may be resistance among policy makers on various levels, not because of mistrust of the research but due to reluctance to change existing teacher policy in an area that may not be viewed as under their own jurisdiction. As resistance to change on individual and system levels can be reduced with strategic interventions, efforts to encourage the use of research in policy and practice should be made accordingly, especially by local actors who can examine research results and determine the significance of these results within their specific context. Many of these initiatives require targeting and specific interventions, for example, through training for research literacy for practitioners, and/or helping to interpret and disseminate research results for a non-academic audience.

Strengthening the knowledge base

We need to improve our data and refine our terms in order to improve analysis and support more effective policy action

There is significant mismatch between the public discourse and the evidence available. There is widespread concern about the impact of the increased use of smartphones and of social media on mental health. However, the underlying data in many existing studies is not sufficiently developed and many newer forms of technology have had little to no research. To improve the evidence base and better inform policies, we need to improve the way we monitor usage and a host of other digital behaviours and skills.

There are several challenges to this. As already highlighted in the previous section, consistent approaches to definitions, methodologies and indicators are lacking. Surveys appear to be a common monitoring / measuring mechanism, but as self-report measures they are prone to bias. There are also misconceptions of digital literacy that need to be addressed. For example, in many frameworks digital and technological skills have been framed as a 'hard skill', part of the suite of subjects in science, technology, engineering and mathematics. This is despite the body of research that demonstrates the importance of “soft” digital skills, and that it is these skills that make a difference in terms of generating positive outcomes from technology use.

Without consistent and shared definitions, agreement on how best to measure what (including multiple methods) and an understanding of how to use the data and results generated, it will be difficult to amass a body of useful knowledge on digital skills and behaviours.

In addition, there is a challenge about access and use of the data that is available. As much of the directly measured (i.e. from user behaviour) digital use data is owned by private companies such as social media platforms and other providers, there is also a need for agreements on sharing data and measurements for research purposes. A need for a systemic approach to evidence-based policy making continues to be essential in determining policy priorities and in maximising protections that can be afforded by national policies.

We need to selectively target and fund high quality and rigorous research on child emotional well-being and digital technology use

In order to develop comprehensive and well-informed guidelines on children’s use of digital technology, there is a need for more high quality research in this field. Regional,

national and international policy agendas can help fill these gaps by selectively funding research in these areas. Some examples of research priorities include:

- work on younger children (i.e. 0-8 years old)
- greater emphasis on how and why children use technology, and what phenomena like "screen-stacking" could mean for processes such as attention or working memory
- understanding the changing landscape of digital technology use and what this means for skills. For example, the ubiquity of mobiles has in many cases concentrated use to smartphones and their apps, at the expense of computers or tablets. Using apps is not a generic digital skill, nor is it active content production skills. How is this related (or not) to the promise of creative self-expression and empowerment that comes with digital technology? To digital skill development more generally?
- establishing causal links between technology use and child outcomes, and understand underlying mechanisms
- understanding recovery after exposure to a cyber risk, to identify where and how children seek help, what works in which context, and to help deliver messages on what they should they do if it happens again.
- a deeper exploration of the benefits associated with technology use such as social capital formation, enhanced cognition (i.e. spatial processing, working memory), physical activity and teaching and learning processes.

In terms of emotional well-being, while many studies have examined the trends as well as the causes and consequences of emotional well-being and ill-being among children and adolescents, there are still areas of uncertainty. In addition, the available evidence is often not translated for an educational audience, and research results too often remain in their original field without much further dissemination, making it difficult to create links between multidisciplinary research findings.

Research priorities for emotional well-being include:

- inclusion of patient-based studies, not just healthy populations, when studying mental health issues or concerns
- examining multiple outcomes and indicators (i.e. the combined effects of stress, anxiety and depression rather than each independently) to better understand what works, when and in which contexts
- understanding how to involve different actors in prevention/detection/intervention to enhance effective programme implementation and delivery.

For both digital technology and emotional well-being, there is a need for:

- longitudinal studies
- controlled experiments with representative samples
- comparable international indicators, including trend data across time that is disaggregated by age or stage of childhood/adolescence
- data on networks and peers
- better use of existing big data (or data from apps), also in combination with other sources of information available (administrative, self-reports etc.)
- real world implications of outcomes in this field, as effect sizes published in studies are often small even if statistically significant. What do these results mean for the day-to-day lives of children and their peers? Does a "large" effect size translate into

functional differences in a child's daily cognition, behaviour, social relationships and educational outcomes?

- clearly outlining the practicality of implementation in terms of costs, additional burden on teachers, and the necessary support that teachers need to carry out training and programmes to strengthen emotional well-being and digital competence.

We need to create and support research networks and brokerage agencies to help foster dialogue and dissemination as well as improve the interdisciplinary nature of the knowledge base

The dissemination of research results should be a planned and systematic process to allow for an interdisciplinary knowledge base that can better inform practice and policy. This could be fostered through the establishment of networks to stimulate dialogue and build communities among researchers themselves. This could also include creating or supporting brokerage agencies designed to provide the required links between research and practice as well as building relevant capacity both in the system and among stakeholders.

And lastly,

Much of the discussion in this volume has necessarily used averages to generalise across countries and systems. However, averages hide important distinctions within and between countries and systems that cannot be overlooked. Inequality in opportunities begins at birth, and often widens as individuals grow older. Disparities in families' capacity to support their children (including by getting them into good schools) continue to translate into differences in children's achievements, both in outside of the school. This is true for educational achievement (and performance on tests, including PISA), educational attainment (children from more affluent families are less likely to drop out of school without a diploma and are more likely to complete tertiary education), labour market integration and later life success.

The discussion on social mobility and the intergenerational advantages of education is long-standing in both research and policy worlds. Behind the science are serious (and difficult) societal questions about the relative responsibilities of schools and families. Education is not a magic solution for disadvantage, and it cannot replace the formative role of parents in child development. Strong partnerships and collaboration with families and communities can contribute to better learning environments, but they cannot do it all.

This volume took a comprehensive look at emotional well-being and digital technologies in modern childhood, and the intersections between them. It identified key changes that often fall outside conventional education discourse and the challenges they could pose for education. It suggested possible solutions to these challenges, with the goal of providing research and policy options that will help countries in educating 21st century children and the opportunities and challenges they face in the modern world.

Many of these trends are a continuously moving target, and reports such as this can become quickly outdated. The work for education systems across the OECD is to try to stay ahead of, or at least on top of, the curve. To do this, education, like all public sectors, must break down its silos and work across government departments and research disciplines. It must engage an increasingly broad variety of actors, including the private sector. It must also evolve and grow as our societies and citizens develop, anticipating change and finding preventative solutions rather than simply reacting to problems.

By analysing the available research and data from a broad range of disciplines and linking these findings to educational policy and practice, this volume explores the potential of education systems to proactively adapt and change along with our communities and children. We owe it to our children and youth to separate fact from fiction, and help support them to get the best start in life.

Contributors

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Tracey Burns is a Senior Analyst in the OECD's Centre for Educational Research and Innovation. She heads a portfolio of projects including Trends Shaping Education, 21st Century Children and Innovative Teaching for Effective Learning. Her most recent OECD publication is "Trends Shaping Education 2019". Previous to her time at the OECD she led research investigating newborn infants' responses to language, and was an award-winning lecturer on infant and child development. Tracey holds a B.A. from McGill University, Canada, and an M.A. and Doctor of Philosophy in experimental psychology from Northeastern University, United States.

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Educational Research and Innovation

Educating 21st Century Children

EMOTIONAL WELL-BEING IN THE DIGITAL AGE

What is the nature of childhood today? On a number of measures, modern children's lives have clearly improved thanks to better public safety and support for their physical and mental health. New technologies help children to learn, socialise and unwind, and older, better-educated parents are increasingly playing an active role in their children's education.

At the same time, we are more connected than ever before, and many children have access to tablets and smartphones before they learn to walk and talk. Twenty-first century children are more likely to be only children, increasingly pushed to do more by "helicopter parents" who hover over their children to protect them from potential harm. In addition to limitless online opportunities, the omnipresent nature of the digital world brings new risks, like cyber-bullying, that follow children from the schoolyard into their homes.

This report examines modern childhood, looking specifically at the intersection between emotional well-being and new technologies. It explores how parenting and friendships have changed in the digital age. It examines children as digital citizens, and how best to take advantage of online opportunities while minimising the risks. The volume ends with a look at how to foster digital literacy and resilience, highlighting the role of partnerships, policy and protection.

Consult this publication on line at ***https://doi.org/10.1787/b7f33425-en***.

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